AUDIO VISUAL COMMUNICATION REVIEW

AV

James D. Finn

Robert Lumsdaine

Paul Saettler

Richard R. Willey

F. J. Van Bortel

A. W. VanderMeer

Direction in AV Communication Research

Directed Observation in Film Utilization

Historical Overview of Audio-Visual Communication

Educational TV and Community Service

Color vs Black and White in Instructional Films

Departments

Book Reviews

World Communications

Film Reviews

Radio

Research Abstracts

SPRING 1954

VOL. 2
NO. 2

AUDIO-VISUAL COMMUNICATION REVIEW

Copyright 1954 by
Department of Audio-Visual Instruction, National Education Association

WILLIAM H. ALLEN, EDITOR
University of Wisconsin

KENNETH NORBERG,
DEPARTMENTAL EDITOR
Sacramento State College

ANNA L. HYER, Managing Editor, Department of Audio-Visual Instruction

Editorial Board

Edgar Dale
Ohio State University

James D. Finn
University of Southern California

Elizabeth Golterman
St. Louis Public Schools

Charles F. Hoban
University of Pennsylvania

J. J. McPherson
National Education Association

Kenneth Norberg
Sacramento State College

Paul W. F. Witt, Teachers College, Columbia University

Editorial Consultants

Lester F. Beck
University of Southern California

Floyde E. Brooker
Washington, D. C.

C. R. Carpenter
Pennsylvania State University

Lee W. Cochran
State University of Iowa

Stephen M. Corey
Columbia University

A. J. Foy Cross
New York University

Irene F. Cypher
New York University

Amo De Bernardis
Portland (Ore.) Public Schools

Robert de Kieffer
University of Oklahoma

Franklin Dunham
U. S. Office of Education

Louis Forsdale
Columbia University

James J. Gibson
Cornell University

William Gnaedinger
Washington State College

Helge Hansen
University of Minnesota

S. I. Hayakawa
University of Chicago

Carl I. Hovland
Yale University

James S. Kinder
San Diego State College

F. Edgar Lane
Dade County (Fla.) Public Schools

L. C. Larson
Indiana University

Harold D. Lasswell
Yale University

Paul F. Lazarsfeld
Columbia University

F. Dean McClusky
University of California, Los Angeles

Morton S. Malter
Michigan State College

Wesley C. Meierhenry
University of Nebraska

Francis W. Noel
California State Dept. of Education

Paul C. Reed
Rochester (N.Y.) Public Schools

Wilbur Schramm
University of Illinois

Arthur C. Stenius
Wayne University

Grace Stevenson
American Library Association

Kelsey B. Sweatt
Massachusetts Dept. of Education

Ernest Tiemann
University of Texas

I. Keith Tyler
Ohio State University

Roy E. Wenger
Kent State University

Harold Wigren
Houston Independent School Dist.

Don G. Williams
Syracuse University

Walter A. Wittich
University of Wisconsin

W. Roger Zinn
Grand Rapids Public Schools

AUDIO VISUAL
COMMUNICATION REVIEW

VOLUME II, NUMBER 2 SPRING, 1954

CONTENTS

Articles

- DIRECTIONS IN AV COMMUNICATION RESEARCH 83
  JAMES D. FINN
- DIRECTED OBSERVATION IN FILM UTILIZATION 103
  ROBERT LEESTMA
- HISTORICAL OVERVIEW OF AUDIO-VISUAL COMMUNICATION 109
  PAUL SAETTLER
- EDUCATIONAL TV AND COMMUNITY SERVICE 118
  RICHARD R. WILLEY
  F. J. VAN BORTEL
- COLOR VS BLACK AND WHITE IN INSTRUCTIONAL FILMS . 121
  A. W. VANDERMEER

Book Reviews

- HOVLAND, CARL I.; JANIS, IRVING L.; *and* KELLEY, HAROLD H. *Communication and persuasion* 135
  Reviewed by A. A. Lumsdaine

World Communications

- *The International Council for Educational Films* 143
  T. V. Adams
  Rowland Hill

Film Reviews

- *Two Recent University-Produced Films* 148
  Reviewed by Robert W. Wagner

Radio

- *Omnibus, Opposites, Hi-Fi, and Competition* 151
  Jim Miles

Research Abstracts

- *The Relationship of Optimal Effects and Film Literacy to Learning from Instructional Films.* John Mercer 156
- *Use of Graphs in Air Force Teaching Materials.*
  Lewis V. Peterson 157
- *Response Practice as a Factor in Transfer of Training.*
  Gordon A. Eckstrand 157
- *The Relation of the Social Situation of Contact to the Media in Mass Communication.* Eliot Freidson 158
- *Resistance to "Counterpropaganda" Produced by One-Side and Two-Sided "Propaganda" Presentations,*
  A. A. Lumsdaine and Irving L. Janis 158
- *Word-of-Mouth Communication in the Soviet Union.*
  Raymond A. Bauer and David B. Gleicher 159

The Audio-Visual COMMUNICATION REVIEW is issued quarterly. Subscription $4.00 per year. Special rate to members of DAVI $3.00. Single copy $1.25.

Original manuscripts, books for review, and editorial communications should be sent to the Editor: WILLIAM H. ALLEN, Bureau of Visual Instruction, University of Wisconsin, 1312 W. Johnson Street, Madison 6, Wisconsin.

Subscriptions and business communications should be sent to: J. J. MCPHERSON, Executive Secretary, Department of Audio-Visual Instruction, National Education Association, 1201 16th Street, N.W., Washington 6, D. C.

DIRECTION IN AV COMMUNICATION RESEARCH

•JAMES D. FINN

The many possibilities for future AV communication research are analyzed and fruitful suggestions of procedure are discussed. *James D. Finn is Associate Professor of Education and Chairman of the Audio-Visual Education Department, University of Southern California.* *This article is based upon a paper presented at the Research Section meeting of the DAVI National Convention in Chicago in March, 1954.*

THE ADOPTION of the term *communication* by the leadership of the audio-visual movement has had and will have a much more profound effect on the thinking and direction of the field than is yet realized by most practitioners. For the concept of *communication* or *communications,* as the case may be, is a seminal, organizing concept in all of the social sciences similar in scope and effect to the concept of field theory that swept through physics and biology into psychology and philosophy. When assessing the direction of future AV research, it is necessary to keep this constantly in mind.

We can do no better than begin by examining the concept of communication. And there is probably no clearer statement of the breadth of this concept than that given by Dewey. He reminds us that,

> Society not only continues to exist *by* transmission, *by* communication, but it may fairly be said to exist *in* transmission, *in* communication. There is more than a verbal tie between the words common, community, and communication. Men live in a community in virtue of the things which they have in common; and communication is the way in which they come to possess things in common. Persons do not become a society by living in physical proximity .... If, however, they were all cognizant of the common end and all interested in it so that they regulated their specific activity in view of it, then they would form a community .... Concensus demands communication .... Not only is social life identical with communication, but all communication ... is educative (11:5-6).

If this breadth of the concept is accepted, it follows that research in communication means research in all of the social sciences and in any other area of human endeavor that is applicable to understanding human beings and the way they live.

Such a broad view must necessarily be somewhat unfamiliar to the vast body of audio-visual practitioners. The plain fact is that the audio-visual movement has suddenly grown up. This very journal is evidence of that fact. Where, a few years ago, most research known to AV workers consisted of (a) normative surveys of the amount and number of dollars, projectors, or materials in a program or programs, or (b) experimental studies of the amount of learning achieved upon exposure to a particular device or material, suddenly the literature is filled with such concepts as "status as a determinant in response to a film," the "transactional *vs* the objective theory of perception," and "the effects of preparatory communications in modifying subsequent attitudes toward stressful or frustrating situations."

This sudden move toward maturity, of course, had been foreshadowed in many places. The work of Weber (33), for example, is related to the perceptual problems considered today; Boring (6), in writing a history of experimental psychology, had to write another book about the history of senation and perception because there was so much material; and the Payne Fund Studies (7), long considered an audio-visual landmark, are accepted today by those outside of the immediate stream of audio-visual activities as one of the great pioneering efforts in communication research. But, foreshadowed or not, the sudden move from a relatively restricted and applied field to the whole area of the social (or, perhaps a better term, the *human*) sciences, makes the assessment of future directions for research somewhat difficult to achieve and even more difficult to communicate to the practitioner.

And it is in the mention of the practitioner, the practicing AV director, the film producer, the group leader using materials, that the first question as to direction of future activities arises. What is the role of "applied" *vs* "pure" research in the AV communication field? This question is at the bottom of the controversy between Lumsdaine and Hoban and van Ormer which appeared in an earlier issue of this journal (28, 17). If research is primarily viewed as empirical as Lumsdaine would have it, then in the future we would have to eliminate everything but highly controlled studies using advanced statistical techniques analyzing variables. This would, in Lumsdaine's scalpel-like style, then create an "audio-visual science."

While it is not the purpose of this paper necessarily to take sides in a controversy, none-the-less, in looking to the future, such empirical limitations seem a little like native taboos forbidding the climbing of a mountain. The field needs all the empirical, laboratory-derived, highly refined data that it can get; but, in the larger view, these data will represent only a few of the signposts on the road ahead for many years to come. The empirical approach, as Hoban and van Ormer point out, has never been the complete method of science, and to forbid other techniques of study will make us plainsmen, not mountaineers.

The position of Hoban and van Ormer that ". . . the sharp line of separation between the research scientist and the practical worker in the applied field is broken down, and the two are regarded as complementary, rather than as having disparate and even conflicting interests" (17:188) is echoed throughout the literature of science for those who take the trouble to look. For example the sociologist, Wirth, in discussing research in racial relations says, "I know of no rule in science which says that we must halt our investigations whenever they threaten to have important practical consequences. On the other hand there is no rule of practical conduct which dictates that all action must cease until science has given us a complete and final answer to our questions" (34:382). Conant also reminds us that, "the practical arts at first run ahead of the science; only in very recent years have scientific discoveries affected practice to a greater extent than practice has affected science . . . that before 1850 the steam engine did more for science than science did for the steam engine" (9:36).

In 1954 "audio-visual science" or the "science of communication" is probably closer to the relation of physics with the steam engine of 1850 than to the 1954 relation of physics with the cyclotron. Furthermore, a case can be made that, in dealing with the human sciences, we can never completely emulate the physical sciences, and that the development of our own techniques may make the distinction between applied and pure research meaningless for future action.

Viewing communication and society as interrelated if not synonomous terms, the future of AV communication research should be in the direction of considering pure and applied not as walled off opposites, but as lying at the ends of a continuum. Then we can say that such and such an experiment or study is "in the direction of . . ." and not set up controversial and probably nonsensical boundaries.

Having set aside the distinction between applied and pure science as applied to AV communication research of the future, the next problem is to set up some sort of categorization which will help in our thinking. There are several ways to approach this problem of categories for future research. The obvious procedure would be to analyze the existing state of research and indicate the gaps that need to be filled; another approach would be to set a priority in terms of problems that most need solution. Both of these methods have merit.

However, keeping the definition of "communication as society" in mind, another possibility suggests itself. Possible research areas may be outlined by examining the functions of the investigator in the human sciences. In this connection, the noted scholar in the field of higher education, W. H. Cowley, has developed a fruitful classification of the types of investigation in higher institutions (10). Cowley has pointed out that investigations are of two kinds: *conceptualistic* and *factualistic*. Conceptualistic investigation is the ordering of facts into concepts and the development of concepts for the further ordering of facts. Factualistic investigation is empiricism, *i.e.*, the pursuit of knowledge by observation and experiment —the gathering of facts. The former can be called *scholarship*, the latter *investigation*, to make the distinction clearer.

The field of AV communication, however, cannot be left with but these two classifications of studies. In the first place, much research will have immediate practical consequences which in turn will change the research situation. This is the problem for what might be called social engineering research or action research.

Secondly, a place must be made for the field of criticism, whether such criticism is called literary, rhetorical, scientific, or social. With the present limited state of tested empirical knowledge about the products of communication, we will for many years have to rely on the insights and tools of criticism to supplement the work of other investigators. Criticism can be called scholarship, but, in the literary tradition, the pure scholar is a literary pedant, not a critic in the sense that, let us say, Pater was a critic.

We can now outline these four categories of studies and indicate briefly the nature of their functions:

1. *Investigation*—empirical research into the nature of the whole communication process.
2. *Scholarship*—conceptualization of the communication process and the development of a communications philosophy.

3. *Communication engineering*—the study and solution of field problems in communication.
4. *Criticism*—the development of insights into the products of communication primarily from the standpoint of aesthetics, but with adequate attention to social criticism.

The categories listed above should not be thought of as mutually exclusive, anymore than the absolute distinction between pure and applied research should be maintained. The boundaries between investigation and scholarship must necessarily be hazy; investigation requires scholarship and scholarship is based, in part, on the fruits of empirical studies. The same is true of the other categories. These categories can be useful, however, as we attempt to assess the future of research in the AV communication field.

PROBLEMS FOR INVESTIGATION

Even a quick examination of the AV communication field will reveal an infinite number of possible and necessary empirical and/or tightly controlled studies. This situation is, no doubt, one of the main reasons that Lumsdaine and other empirical investigators have such a vigorous commitment to their field. There is so much to be done. Some areas of need that may be blocked out are: (a) investigations in the classic tradition regarding effectiveness of materials and methods, (b) investigations in the area of the mass media, (c) investigations in areas basic to communications study, (d) investigations of forms of projective and AV testing.

Classical-Type Investigations

A comparison of the studies now being carried on with the motion picture at The Pennsylvania State University and at the Air Force Personnel and Training Research Center, and earlier studies of the film, will show that it takes years to answer questions concerning the make-up, use, and effectiveness of one AV device. The perennial questions have not yet all been answered. How, where, and when, if at all, should you show a film more than once? What is the relation of the understandability of the sound track to learning from the visual phases of a skill film? Which is better, in developing high order concepts, a film or a demonstration? We have partial answers to some of these questions and further studies are being made. The point is that after 30 years of research on one device we are still seeking fundamental answers to questions which must have occurred to Rulon, Lashley and Watson, and even Sumstine.

From the research point of view, almost all other AV devices and materials are poverty-stricken as compared with the motion picture. The few studies that do exist do not even partially answer all the questions that concern us. A list, not necessarily complete, can be quickly developed. We need empirical investigations in:

1. *Field Trips.* There are several good studies in this area but not since the work of Raths in the late 30's has anything rigorous been done.
2. *Slides, Opaques, etc.* Even the answer to such a simple question as the relation of size to learning (projection vs. examination of an individual study print) is not known except intuitively by practicing teachers.
3. *Filmstrips.* While the filmstrip can be classed as a projected still picture and studied as above, such problems as the effect of a fixed sequence of pictures needs study. We do not even really know why teachers don't use filmstrips.
4. *Radio-Recordings* (audio in general). The studies at Ohio State University and at the University of Wisconsin in the late 30's promised much in this area, but delivered all too little. Since that time very little has been done with audio materials used for educational purposes, although studies done on mass audiences are helpful. The earlier studies in educational broadcasting can be useful as a base from which to proceed today
5. *Museums and Realia.* Experimental studies in this area are practically *nil.* There has never even been, for example, a study of the effect of arranging an environment of three dimensional materials in a classroom to introduce a unit of work—a practice now followed by many enlightened elementary teachers. Studies of museum trips, educational displays,. etc., are practically non-existent, with the U. S. Department of Agriculture doing most of what little work has been done.
6. *Still pictures.* Since Buswell raised more questions than he answered concerning picture reading, the area of the still picture used educationally has remained fallow from the research point of view. Again, studies in the related area of the mass media (for example, advertising agency studies on the reading of magazine copy) will be helpful but not conclusive.

7. *Graphics.* There have been several good studies in this field, but by comparison, again, really very little. Since the construction and reading of graphic materials involves a set of symbolic manipulations similar to that of writing and reading a language, it would follow that investigations similar to those associated with writing and reading need to be carried out in the graphics area. As a reminder, it has been estimated that there are about 20,000 studies extant in the field of reading.
8. *Television.* Because of commercial, educational, and military interest in this medium, a relatively large number of studies has already been done. Television is moving closer to the motion picture situation in this regard. And yet what has been said about the motion picture applies even more here.
9. *New Technological Devices.* To the writer's knowledge, there has been but one study on three-dimensional motion pictures and there is one study on three-dimensional still pictures in progress. Questions regarding the relation of color and black-and-white on film (and later, of course, television) remain inconclusively answered. The area of stereophonic sound remains untouched. Wide screen, Cinemascope, Cinerama, etc., are unexplored fields.

Investigations into the Mass Media

An analysis of existing studies of all types in the field of the mass media of communication is a task far beyond the scope of this paper. Klapper (22: Intro. 13) pointed out that Smith, Lasswell and Casey in their monumental bibliography (32) cited 3,000 titles. Klapper himself analyzed approximately 250 "published and unpublished works." Schramm (30) in analyzing research on "communication effects" listed 63 titles. Scholars have, however, been able to generalize enough on the status of research in this vast field to help us find directions.

The point need not be labored that research into the origin, content, and effects of the mass media of communication is as much a phase of AV communication research as direct study into the educational uses and effects of these media. One group of studies supports the other. The boundaries, in any case, are not definable between the two; and, as Hovland has pointed out (19), studies of effects, for example, resolve themselves into studies of the nature of learning, and the boundaries change to a circle enclosing both fields.

The question then becomes one of where is this field going and where should it go? The classical description of the process of communication is something like this:

Who—
Says what—
Via which means—
To whom—
With what effect?[1]

And this classical description is really an outline of research in the mass media field.

Any point in this process is still an uncharted field for research. For example, Klapper was asked four questions by Dr. Robert D. Leigh as part of the Public Library Inquiry. These questions were:

1. Do the mass media raise, or lower popular taste, and how?
2. What are the comparative effects of books and each of the other media, including face-to-face discourse, and of multiple media operations?
3. What is the function and effect of "escapist" communication (best sellers, soap operas, etc.)? Is this kind of relaxation related to our form of culture? Does it divert persons from attention to serious public affairs? Does a plethora of mass material produce confusion and lack of interest, or the opposite?
4. How is persuasion with regard to important civic attitudes carried on with the greatest likelihood of effectiveness? (22: Intro. 2).

After a very thorough study of the empirical data available, Klapper reported: "The paucity of empirical data bearing directly upon the questions asked by the Director of the Inquiry is perhaps the most conspicuous, if disappointing, finding of the entire research. *It is quite impossible, on the basis of existing evidence, to provide a definite answer to any of the four questions.*" (22: Intro. 13) [Italics mine]. Klapper goes on to point out that a large number of studies have some relevance, but are not conclusive in answering these questions.

Klapper is, of course, not the only individual that has assessed research in the mass media. A whole group of social scientists, meeting at the University of Illinois, devoted their thinking to this problem and produced a book (29) which is almost entirely devoted to determining directions for future research. The papers all agree that much empirical data is needed, and they pretty well agree as to the necessary direction for study. Ivey, for example, after stating that "at the present time communication research is primarily oriented around a media-audience axis" goes on to set up three

[1] Adopted from Harold D. Lasswell (25).

areas for research: (a) Getting contact with the communicatee, including physical and economic availability of media, communication habits of individuals, reinforcement from other sources, media competition, etc. (b) Holding the attention of the communicatee. (c) Obtaining the desired responses from the communicatee, including problems of overcoming previous conditioning, etc. (21).

Berelson, at the same meeting, identified five variables in any given communication situation: communications, issues, people, conditions, effects. These, he said must be studied in their interrelationships and by all possible methods—historical, trend analysis, statistical correlation of ecological and voting data, case study, opinion surveys, experimental, and panel (3).

In the year following the University of Illinois meeting, Schramm published a long paper (30) reviewing known research in mass communication and proposing 32 hypotheses needing investigation in the area of the effects of the mass media upon people. An example of the difficult research problems these hypotheses set up can be seen by looking at his fourteenth hypothesis: "If other variables are controlled, attitudes and opinions are more likely to be changed when mass communications utilize and slightly redirect existing drives in their audiences, rather than try to create new ones."

In summary, it can be said that there is not a place on the "who says what to whom" formula that does not need investigation. Scholars have assembled a number of analyses which can give us direction here, and anything that is discovered in the future about the nature and effects of the mass media will be directly useful to us in the educational situation.

Investigations into Basic Areas

Nowhere is Dewey's basic dictum that "communication is society," and its inevitable corollary that research in communication is research in the social sciences, more evident than in the existing need for fundamental research into the basics which condition and determine communication. I refer here to such things as (a) the process of communication, (b) perception, (c) group behavior, and (d) learning.

In considering the process of communication itself, all students of the field are agreed that studies are needed on the communicator, the stimuli transmitted, the means of transmission, the individuals who respond, and the nature of the responses made. This same formula was stated above in connection with the mass media, but

now it is considered as a *process* applicable either to individuals or the mass. Studies of the communicator can be:

1. Psychological
2. Socio-cultural
3. Economic
4. Political.

Studies of the stimuli involve content analysis as, for example, described by Berelson (4), but including the areas of semantics, linguistics, symbolization, etc. Study of the individuals responding is really the field of psychology, with some emphasis upon social psychology; and the study of the responses of these individuals is related to studies in the fields of learning, anthropology, and sociology.

It can be said, I think, without fear of contradiction, that empirical research in any area of the social sciences will help us with our understanding of the communication process. A student who examines the social situation in any way is also examining the communication situation. This has been noted as being true in other fields as well. For example, advanced students of industrial relations have come to the conclusion that they cannot move too far until the social sciences themselves move farther. This is precisely the case with communication research.

In addition to the omnibus category of all the social sciences, some basic areas may be singled out to deserve special attention. Perception research is one of these. Norberg has, in this journal and elsewhere, ably discussed these problems, and I shall not devote any time to them. The attention of students in the field should be called to Huxley's latest book as one possible new direction for study (20). The effects of the drug, mescalin, on perception of the so-called "real world" open up a whole new area for study. What, for example, would be the effect of this drug on the viewing of a motion picture and what could we learn about perception from a study of these effects?

Group behavior is another significant area for communication research that is basic to understanding the process. Studies of communication nets in groups (15), leadership and organizational studies (2), differences between group and face-to-face communication—all are facets of this area that need more study so that we may understand why communication takes place, why it fails, and why it succeeds.

Learning, particularly that phase of learning relating to attitude change, is another basic area that must continually be pushed forward. Hovland (18) has recently listed some topics in which his research group is interested and which are indicative of the directions we need to go. These areas include: (a) studies of motivation as it affects attitude change, (b) studies of the effects on attitudes by references in the communication to groups of which the individual is a member, (c) studies of the internal process occurring in attitude change, (d) studies of the influence of past experience on attitude change, and (e) studies of the duration of changes in attitude brought about by communication. These topics, all related to learning and communication, are the formulation of one group of psychologists. Certainly these and other studies of learning are basic to our future understanding..

Investigations Into the Area of Projective and AV Testing

Recently it has become apparent that the whole area of psychotherapy has a communication aspect, particularly at the face-to-face level. What has not been so apparent to many communication students is that some of the projective tests, such as the TAT and the Rorschach, which use visual means, are a possible source of ideas for both research and development in the AV communication field. In this area, the recent work of Beck and Rose is almost a pioneering enterprise. Using the motion picture as a medium they have created situations and let the audience respond to them on a projective basis. Beck's recent film on emotions is an example of this trend. Here indeed is a fruitful area for research with many types of AV materials seeking many kinds of responses.

Closely allied to the idea of projective AV techniques is the area of audio-visual testing. For years there has been a feeling among research workers that we have been explaining through audio-visual means and then testing for verbal responses, and that this procedure may be questionable under certain circumstances. The development and testing of audio-visual measuring devices and the possible implications for intelligence and achievement testing needs a great deal of study.

This review, necessarily long, indicates the vast field open for empirical investigation in the study of AV communication. As pointed out in the opening sections of this paper, factualistic investigation is only one form of study; conceptualistic investigation or scholarship is also necessary.

PROBLEMS OF SCHOLARSHIP

Although there are no real boundaries between factualistic and conceptualistic investigation, the development of concepts and the ordering of existing knowledge is an area which needs particular emphasis in the AV communication field. Our fundamental problem is *theory* and will continue to be theory for years to come. I have stated my position on this matter elsewhere (13) and can only reemphasize it here.

This problem of the need for theoretical formulation is now widely recognized. Hovland, in speaking of social communication says that we face the "lack of a comprehensive theoretical structure to embrace the diverse ideas and hunches from the various fields" (19:374). Berelson, Ivey, and Schramm all point to this need (3, 21, 30).

When you consider the diverse elements necessary to a theory of communication—as, for example, ably discussed by Harwood and Cartier (14)—the need for hard thinking and conceptualization comes sharply into focus. Cultural anthropology, social psychology, linguistics, sociology, aesthetics, learning theory, philosophy,—the list can go on and on—constitutes, so to speak, the raw material needed to develop theory. It is my thesis that, for the next few years, we could well use two scholars, as here defined, to every one empirical researcher. This is probably the greatest need of the field, abstraction, generalization, vision—scholarship in the best sense.

There are also two special areas that are not amenable to empirical research which must be explored by the tools of scholarship. The first of these is history. Since Saettler's recent study, it has become apparent that a large number of specialized historical studies would be extremely useful. Too many AV people, both practitioners and students, lack the necessary perspective without which any field can proceed with confidence.

The second special area for scholars, and they need to be especially competent, is the area of philosophy. Fundamental, perhaps, to all our efforts, should be a philosophy of communications. While the generalized theory referred to above may eventually become a communications philosophy, direct philosophical study is also necessary. For example, no one in our field has yet examined Susanne Langer's two books (23, 24) from this point of view. The work of Sapir, Carnap, Cassirer, and many others is not even known. The "perception controversy" appearing recently in this *Review* has philosophical overtones stemming back to Dewey and

Bentley (12) whose views on transaction yet remain, for example, to be compared to those of Lord Russell or Whitehead. Epistomology, particularly, is a philosophical base for the communication field. And, in passing, those "operationalists" among psychologists and others should be reminded that the boundaries between philosophy and psychology have never been as clear as they think; and the fact that many of them claim to have no philosophy is in itself a philosophical position.

Conceptualistic investigation, including historical and philosophical studies, represents another vast area of study remaining for future exploration. Like empiricism, studies in these areas will not supply the answers to all questions or solve all problems. Many communication problems demand concrete and immediate solutions so that communication may take place effectively. This represents the third area—action research.

PROBLEMS OF ACTION RESEARCH

Problems of action research were identified as belonging in the general area of social or communication engineering. Again, emphasizing that there can be no real distinction between pure and applied science in this field, there are, nevertheless, thousands of problems dealing with the application of techniques in the AV communication field. The communications (social) engineer can concern himself, for example, with: (a) technical developments, (b) campaign-type studies, (c) curriculum studies, and (d) organizational studies (surveys).

Technical development for AV communication purposes is always needed because of general technical developments in the communications field. At the present time, 3-D and all the newer technological devices need adaptation to particular AV communication needs. The 16mm wide screen is another example of this trend, as is the long promised, but yet to be revealed daylight projection screen. High fidelity sound is sweeping the country, and yet we are lucky to get 4000 c.p.s. out of a motion picture projector in classroom or industry. Much of the technical development in this area will and should be done by industry. However, the AV industry could use much more help from research and development-minded AV practitioners.

In addition to these larger technical developments, we need thousands of smaller ones to help the individual communicator—the teacher, industrial trainer, or salesman. Many more such devel-

opments can come from AV centers in colleges, universities and school systems.[2] Teachers need to have all kinds of gadgets to help them easily draw, display, and prepare materials and to better their room environments and communication techniques.

The second category, *campaign-type studies*, can either be research in the mass media as developed above, or the techniques may be used in applied field studies. The work Edgar Dale has done on the AV communication problems of the National Tuberculosis Association and the Red Feather Agencies is a good example of the latter. When an organization such as the National Tuberculosis Association begins an educational campaign using films, filmstrips, pamphlets, displays, and group meetings, it needs research assistance to be sure it hits the target.

Readability techniques, utilization techniques, production techniques—all must be applied to field problems of this nature whether they arise from the needs of one store or factory or from a civic agency or school system. Likert's concept of life-space mapping as a prelude to the production of AV material in order to insure reaching the audience is another example of this type of campaign study (27). This area presents a tremendous challenge for the communications specialist.

The third category of action research is *curriculum studies*. By that is meant, primarily, on-going studies in the curriculum of schools and colleges, although these same techniques with some modification might be applied to industrial training problems. The recent literature of curriculum development is full of the concept of action research, because, as is so often pointed out, curriculum is, in the last analysis, people. Changes and developments are brought about through field studies participated in by groups of teachers and administrators who change in the process as they change the curriculum.

While AV communication has been considered in many of these developmental studies, it usually is considered in a peripheral fashion under the heading of "community resources" or in a list of aids appended to resource units. AV communication needs to get into the main stream of these studies and AV practitioners need to participate in them more widely.

Evidence of how far out of the main stream the AV movement is may be found in the program of the national meeting for the Association for Supervision and Curriculum Development held in

[2] The recent invention by John P. Vergis, a graduate assistant at the University of Southern California, of a slide mechanism for material in the opaque projector is an example of this type of development.

Los Angeles in March of 1954. The theme of the conference was "Creating a Good Environment for Learning," a topic which most AV practitioners would feel is almost at the core of AV thinking. And yet, of the 69 study-discussion groups set up by the conference, only three could be considered related to the AV movement. "Learning environment," in the minds of most of the curriculum leaders in the United States, seems to involve solely the psychological environment—a concept which, from the AV point of view, is narrow and starved. The solution to this problem is action research with an AV emphasis in curriculum matters.

Finally, what can be called *organizational studies or surveys* represents a new, and I think exciting, possibility for action research. The typical normative survey of budgets, personnel, etc., done by a Master's candidate or state organization, while important and applicable, is not what is meant here. For many years, in the educational world, teams of experts have been going into school systems and conducting surveys. These surveys have to do with finance, buildings, personnel, etc.; and, in some cases, curriculum and instruction. Such surveys are very influential in the subsequent development of the school system studied.

Recently, it has been possible for a study of the audio-visual program to be integrated into these overall surveys. The Bureau of Educational Research at Ohio State University has done this several times; the survey team under the direction of Dean Irving Melbo of the University of Southern California is now including the audio-visual program in some of the larger studies.[3] The possibilities of improving and creating audio-visual programs by such extensive field studies cannot be over-estimated. Opportunities are provided to properly fit the program into the curriculum patterns and to set up proper budgets, facilities, and personnel.

An extension of the general survey concept can be found in the even newer possibility of specialized studies of the audio-visual programs of school units such as districts and counties and of applying the same study techniques to similar organizational problems in industry. Many school districts, for example, have reached the point where they need outside assistance in planning for the development of their audio-visual program—the days of casual

[3] See, for example, Irving R. Melbo *et al., The Report of the Survey of the Monrovia-Duarte Union High School District*, published by the author, Los Angeles, 1951 (mimeo). Also, the survey of the Phoenix, Arizona High School District now being conducted will have an AV section.

film-renting are past. AV experts will find more and more possibilities for field development in this type of need.[4]

The four categories of action research, added to the problems for empirical and conceptualistic investigation, leaves one remaining general area of investigation. This area may conveniently be described as the area of criticism.

PROBLEMS OF CRITICISM

Literature, art, drama, and even architecture have a history and tradition of criticism. Much of this might be considered in the realm of scholarship or philosophy as defined in this paper. However, the best of this tradition is creative and a source of insights into culture and man himself. It represents a genuine intellectual endeavor. Insofar as art, drama, and literature are part of the communications field, criticism is already an area of study.

However, the devices and techniques of mass communication, the creation and development of AV devices, have changed the critical picture. There is a great deal of confusion in literary circles today. *The Saturday Review* is devoting a series of articles to the mass media and the taste of the common man;[5] the president of Yale University cries loud and long about the decline of reading taste; John Mason Brown vilifies comic books from the lecture platform.

The problem here is that we need creative criticism in a new form. This form should take into consideration Hoban's point that there is no mass production of motion pictures—only the mass production of prints—that a film is an artistic and creative accomplishment subject to all the strictures of any art form; and Lazarsfeld's opposite point that, while a work of art has here-to-fore been criticized on the basis of its relation to an artistic personality, on the other hand a radio program, film, or formula-written magazine story is the creation of a number of people and the test of artistic personality can no longer be applied.

In assessing directions for the future, three areas of criticism may be outlined. They are: (a) literary criticism applied to AV products, (b) scientific criticism, and (c) social value criticism. While it is beyond the scope of this paper to develop a complete theory of criticism, these three areas may be outlined.

---

[4] See, for example, Finn, James D. *et al.*, *Report of the Study of the Audio-Visual Program of the Whittier Union High School District.* Whittier, Calif.: the Author, 1953 (mimeo).

[5] See, for example, Cooke, Alistair. "The Press and the Common Man." *The Saturday Review*, March 13, 1954. p. 9, 10, 55, 56.

The first area, *literary criticism*, has traditionally assumed honesty and the possibility of communicating it. When attempting to apply this tradition to the mass media, difficulties arise. It is very difficult to winnow honest criticism of the products of the mass media from the great abundance of false and dishonest criticism that exists. As almost any student of the field knows, the mass media more and more seem to be carefully refraining from exercising a critical function. Newspapers are notorious in this regard. The press is rarely if ever criticized by the press and any critic of the press or of advertising is ignored or attacked.

Outside of Liebling and Hollenbeck, few critics of newspapers exist. Criticism of motion pictures, radio, and television represents almost the same situation. Most newspapers, for example, carry motion picture criticism which piles up praise in quantity exactly equal to the number of column inches of display advertising carried by the local theaters.

In all this vast nothingness of criticism, a few voices continually show what can be done and what is needed. *The Saturday Review* makes its contribution to radio and TV criticism with Goodman Ace, Robert Lewis Shayon and Gilbert Seldes; Marya Mannes' occasional piece in the *Reporter* and the work of John Crosby in his newspaper columns are diamonds in a field of coal. Others can be named for other fields—Cecile Starr for non-theatrical films and Irving Kolodin for recordings are examples. More directly concerned with our own field is Hoban's penetrating analysis of the work of John Huston and the application of these concepts to the instructional film (16).

These efforts show what can be done. It takes a creative, artistic thinker to do it right. No more devastating a comment on the use of TV for political ends under the guidance of advertising agency thinking can ever be made than the one by Goodman Ace when he described what the Gettysburg Address would be like if given the same treatment that President Eisenhower gets for his fireside chats (1). The tradition of creative thinking about literary and dramatic productions must be transferred to the whole field of AV communication. Here indeed is a great challenge for the future and a tremendous source of ideas and insights.[6]

The second type of criticism listed, *scientific criticism*, refers to Lazarsfeld's thesis that some specially trained critics can work

[6] Studies in aesthetics, also have a place in this picture. Pure criticism, in dealing with aesthetics, eventually comes to grips with the same problems that plague students of communication. Boas, for example, deals directly with the problem in his study of "Communication in Dewey's Aesthetics" (5).

in the field of standards for the mass media (a critical function) using the results of audience research as a basis (26). Here is a wedding of two areas—mass media research and criticism. Gilbert Seldes, in his recent article on radio, television, and the common man makes much use of audience research to develop insights (31). While this type of criticism obviously cannot be completely separated from the first type or from the one that follows, here is a wide open area for future work.

The most important function of criticism lies in the realm of *social value*, the third area listed. In a sense, all criticism serves this function. Some students of communication, sensitive to the implications of value judgments, find them difficult to include in any pattern of objective studies. Hovland recognizes this dilemma and delineates the area of value as one for study by groups other than research scientists but using research evidence (19). The Commission on Freedom of the Press was such a group.

It may be remembered that one of the major findings of the Commission was that the mass media need continuing, independent criticism, and a recommendation was made for a procedure by which this might be done (8). This still remains the great task. One of the supreme values of a democracy is freedom of communication. Freedom of thought is valueless without freedom of communication. Freedom of communication is threatened on many sides today—monopoly of the mass media by one group, the new cult of government secrecy, unrestricted investigations by legislative bodies, and the actions of crackpot pressure groups that can get an editor fired or a commentator put off the air are all signs of this threat. Freedom of communication probably cannot be maintained in a complex system created by the new technology without continuing, independent criticism.

Other important questions lie in the area of social value criticism. Are our children's value-systems to be created on Madison Avenue and Hollywood Boulevard and conveyed on the back of some cowboy's horse? Is the only test of success for a production on radio, television or motion pictures to be triviality? Is, in fact, the common man the lowest common denominator that a cigarette manufacturer worried about lung cancer can get his advertising agency to cook up?

These questions of social value someday may be resolved by political and social action. If so, that action must be based on intelligence stimulated by criticism. If they remain unanswered, these very communication devices may move us to the point where we

can no longer act politically or socially, either because we may kill ourselves laughing as Gallup has suggested, or because the mass media have so controlled our thinking under a form of organization such as Orwell predicted that we have become impotent. In a sense, these are the most difficult and most imperative of our problems. Some students of AV communication have an obligation to pre-empt the field of social value criticism.

SUMMARY

To summarize, it has been the thesis of this paper that research in AV communication embraces research in all areas of the social sciences. Possibilities for future research were analyzed under four headings: (a) empirical investigation into classical-type effects problems, the mass media of communication, areas such as learning which are basic to communication study, and projective and AV testing; (b) conceptualistic investigation into theoretical problems, history, and philosophy; (c) action research embracing technical developments, campaign-type studies, curriculum studies, and organizational surveys; (d) criticism including literary criticism applied to the products of the mass media, scientific criticism, and social value criticism. The directions for AV communication research seem plain enough. The problem is the tremendous distance we have to go.

REFERENCES

1. ACE, GOODMAN. "TV and Radio." *The Saturday Review.* January 23, 1954. p. 64.
2. BERKOWITZ, LEONARD. "Sharing Leadership in Small, Decision-Making Groups." *Journal of Abnormal and Social Psychology.* April 1953, p. 231-38.
3. BERELSON, BERNARD. "Communications and Public Opinion." In Schramm (29). p. 167-85.
4. BERELSON, BERNARD. *Content Analysis in Communication Research.* Glencoe, Illinois: Free Press, 1952.
5. BOAS, GEORGE. "Communication in Dewey's Aesthetics." *The Journal of Aesthetics and Art Criticism.* December 1953. p. 177-83.
6. BORING, E. G. *Sensation and Perception in the History of Experimental Psychology.* New York: D. Appleton-Century, 1942.
7. CHARTERS, W. W. *Motion Pictures and Youth.* New York: Macmillan, 1933.
8. COMMISSION ON FREEDOM OF THE PRESS. *A Free and Responsible Press.* Chicago: University of Chicago Press, 1947.
9. CONANT, JAMES B. *On Understanding Science.* New York: New American Library, 1951.
10. COWLEY, W. H. "Lecture Notes for the Course, 'American College and University.'" Stanford University, Palo Alto.: the Author. (ditto, undated)
11. DEWEY, JOHN. *Democracy and Education.* New York: Macmillan, 1916.

12. DEWEY, JOHN, AND BENTLEY, ARTHUR F. *Knowing and the Known.* Boston: Beacon Press, 1949.

13. FINN, JAMES D. "Professionalizing the Audio-Visual Field." *Audio-Visual Communication Review.* Winter 1953. p. 6-17.

14. HARWOOD, KENNETH, AND CARTIER, FRANCIS. "On a General Theory of Communication." *Audio-Visual Communication Review.* Fall 1953. p. 227-33.

15. HEISE, GEORGE, AND MILLER, GEORGE A. "Problem Solving by Small Groups Using Communication Nets." *Journal of Abnormal and Social Psychology.* July 1951. p. 327-35.

16. HOBAN, CHARLES F. *Incidental Report No. 2, Some Aspects of Learning from Films.* Instructional Film Research Program, The Pennsylvania State College, 1949 (mimeo).

17. HOBAN, CHARLES F., AND VAN ORMER, EDWARD B. "The Authors Review the Review." *Audio-Visual Communication Review.* Summer 1953. p. 185-89.

18. HOVLAND, CARL. "Changes in Attitude Through Communication." *Journal of Abnormal and Social Psychology.* July 1951. p. 424-37.

19. HOVLAND, CARL. "Social Communication." *Proceedings of the American Philosophical Society,* Vol. 92, No. 5; November 12, 1948. p. 371-75.

20. HUXLEY, ALDOUS. *The Doors of Perception.* New York: Harper, 1954.

21. IVEY, JOHN E., JR. "Communication as a Social Instrument." In Schramm (29), p. 142-55.

22. KLAPPER, JOSEPH T. *The Effects of Mass Media.* New York: Bureau of Applied Social Research, Columbia University, 1949 (mimeo).

23. LANGER, SUSANNE K. *Feeling and Form.* New York: Scribner's, 1953.

24. LANGER, SUSANNE K. *Philosophy in a New Key.* New York: Penguin Books, 1948.

25. LASSWELL, HAROLD D. "The Structure and Function of Communication in Society." In Bryson Lyman (editor). *The Communication of Ideas.* New York: Harper, 1948.

26. LAZARSFELD, PAUL. "Role of Criticism in Management of Mass Communication." In Schramm (29), p. 186-203.

27. LIKERT, RENSIS. "A Neglected Factor in Communications." Press release of Convention speech delivered March 3, 1954, to the Department of Audio-Visual Instruction, NEA, in Chicago (ditto).

28. LUMSDAINE, A. A. "Review of *Instructional Film Research 1918-1950.*" *Audio-Visual Communication Review.* Summer 1953. p. 176-85.

29. SCHRAMM, WILBUR (editor). *Communications in Modern Society.* Urbana: University of Illinois Press, 1948.

30. SCHRAMM, WILBUR. "The Effects of Mass Communications: a Review." *Journalism Quarterly.* December, 1949.

31. SELDES, GILBERT. "Radio, TV and the Common Man." *The Saturday Review.* August 29, 1953, p. 11-12, 39-41.

32. SMITH, BRUCE L.; LASSWELL, HAROLD D.; AND CASEY, RALPH D. *Propaganda, Communication and Public Opinion.* Princeton: Princeton University Press, 1946.

33. WEBER, JOSEPH J. *Comparative Effectiveness of Some Visual Aids in Seventh Grade Instruction.* Chicago: Educational Screen, 1922.

34. WIRTH, LOUIS. "Research in Racial and Cultural Relations." *Proceedings of the American Philosophical Society,* Vol. 92, No. 5; November 12, 1948. p. 381-86.

DIRECTED OBSERVATION IN FILM UTILIZATION

•ROBERT LEESTMA

The establishment of a set to learn is an important factor in the learning of any material. This principle is here applied to the use of films in the classroom. *Robert Leestma is Consultant in the Audio-Visual Center and Lecturer in the School of Education at the University of Michigan.*

AN ACCEPTED practice in film utilization has been that of directing the observation of the class to certain aspects of the film they are to see. An understanding of why class preparation is necessary for effective viewing can be useful in stimulating wider application of good film utilization procedure. It is the intent of this paper to explain some of the psychological bases for directing observation, and also to enumerate briefly some of the techniques that are useful in directing observation.

WHY IT IS NECESSARY TO DIRECT OBSERVATION

A sound motion picture presents a very complex pattern of stimuli to the viewer. Actually, there are several thousand patterns of stimuli presented. Each time a different picture or sound occurs the stimuli patterns change. Because of individual differences in perception, at any given moment picture and sound are capable of being perceived in a wide variety of ways, by individuals as well as by groups. Which stimulus pattern an individual perceives and responds to depends upon a variety of factors, all closely interrelated.

One of these factors is the individual's *background of experience.* No two people have exactly the same experiential background and hence do not always perceive exactly the same thing. Buswell's study of how people look at pictures presented clear evidence of the difference in the perception patterns of a number of individuals

who viewed the same picture (1; Ch. II). Ambiguous figures offer a simple illustration of the fact that a picture can be perceived in more than one way, even by the same individual. The eyes tend to see what they know, and each pair of eyes has a different background of knowledge.

Another important factor is the viewer's *frame of reference,* the way in which he habitually perceives things, the structure or pattern into which he tends to organize his perceptions. This habitual structuring of perception is closely related to an individual's background of experience. The frame of reference helps determine what will be "figure" and what will be "ground" for an individual at any given instant, and thereby helps determine his interpretation of the pattern he is focusing on. Two people may be viewing the same documentary scene of an average American worker. For one viewer certain aspects of the scene dominate and furnish clear proof of the high standard of living achieved by the American worker, while for the other viewer different aspects of the scene dominate and may furnish equally clear proof of the exploitation of the American worker. (To a third viewer, both interpretations might be understandable and partially correct.) It's all a matter of the criteria employed, of "how you look at it."

A third determining factor is *set,* the individual's predisposition to respond to a particular stimulus situation. Several studies have shown that a set to learn a particular thing is more effective than a set merely to observe. Poppelreuter, for example, reported that a list of 12 syllables were learned in 12 readings when the subjects were instructed to learn them while more than 50 readings were required to learn the same material when subjects were merely instructed to observe (5: 224-25). Indeed, it is not necessary to go to research monographs for evidence on this point. Teachers who call the alphabetical role of their class every day are usually unable to repeat more than a few consecutive names without the classbook before them. And how many times do owners see their automobile license numbers during a year and still never learn them! A number of other learning experiments have shown that active participation on the part of the learner in classification or search involving the materials used favors learning more than mere passive observation (5).

The identifiability of the significant stimulus (or "relevant cue," as Hoban and van Ormer (4: 8-8) refer to it) is an extremely important consideration in effective film use. If no directions for observation are given to the viewers, each individual will interpret

the scenes in his own way. The prepotent stimulus for each individual will be determined by his previous experience, his set at the moment, and such "natural" prepotency factors as unusual size, color, movement, or sound. What is "naturally" prepotent for the individual or for a group may or may not be the significant stimulus, the aspect that the viewers are supposed to observe in any given learning situation. For example, in motion pictures that utilize time-lapse photography the viewers may concentrate their interest and attention on this fascinating photographic technique rather than on the growth or change process being illustrated, unless instructed to do otherwise. Unaided identification of the significant stimulus is especially difficult when the film is being used to serve quite different objectives than its producer intended it to serve.

Buswell has provided convincing experimental evidence that directions given prior to looking at a (still) picture definitely influence the selection of the portion of the scene that is perceived (1: 136-141) Directions for observing motion pictures are likewise effective in focusing perception on the significant aspects of the film (as determined by the objectives for the showing) (8).

Set to observe is necessary not only to select the proper item out of a group of strange items, but also to select the proper item from a group of familiar items. A pattern of stimuli can hide familiar objects as well as unfamiliar ones, provided that the viewers have no reason to be looking for the familiar ones (3: 185-6). Magazine puzzles with faces hidden in a landscape scene provide a simple illustration of this point. Which of the relationships perceived in any situation or pattern depends upon how the field is structured. Set helps determine the structure of the field. Set to observe a particular item or particular relationship helps the pupil to isolate and identify the significant portions, and thereby increases the possibilities of achieving the purposes for which the film is being shown.

Set not only directs the pupil toward the significant stimulus, but it also determines to a large extent the prior knowledge that the student will bring to bear on the problem and determines his method of attack (5: 226). The course of thought is strongly influenced by the sets arising from instruction. This directional character of thinking is well supported by experimental evidence (2, 5, 7).

The implications for film utilization procedure of the factors influencing perception seem clear. If we want the pupils to observe

a particular aspect of a film, we will come closer to achieving this purpose by directing their observation to that aspect rather than by just saying, "Now we're going to have a movie" or "Now we're going to have a movie—look at it carefully." If the children know what to look for, they are more likely to find it. Direction of observation develops an expectancy on the part of the pupil, a readiness to respond to a particular stimulus when it is later presented. This expectancy is very similar to what Herbart long ago identified as the "idea in mind at the time." The importance of this concept is well known to every experienced teacher. Directed observation helps identify the significant stimulus and aids the pupils in properly structuring the field.

The foregoing paragraphs explain the importance of directed observation in film utilization. Some of the techniques useful in directing observation will now be mentioned briefly.

TECHNIQUES FOR DIRECTING OBSERVATION

After the film has been selected in terms of purpose, the teacher is ready to prepare the class for the film. This preparation of the class is based on a preview of the film to acquaint the teacher with the film content and treatment. Thorough knowledge of the film enables the teacher to capitalize on its strong points and compensate for its weak ones in terms of the purpose for which the film is being used.

Preparation of the class can take a variety of forms. Advance assignments of activities related to the film content may be made, with particular emphasis on selected items of significance. A variety of audio-visual materials such as specimens, models, and still pictures may be used to help clarify some of the film content. A few pertinent questions that the film will answer may be listed on the blackboard. A brief outline of the film content may be discussed, with special emphasis on the significant items to be observed. The relationship between the film and what has previously been studied or what the pupils already know may be clarified. Unusual photographic techniques such as time-lapse photography may be explained so that the pupils' interest will not be unnecessarily detracted from the objectives for which the film is being shown.

That preparation of the class for a film showing by such methods as those described above is effective in increasing learning has long been known by good teachers. Experimental evidence supports this belief. Studies by Wittich and Fowlkes (8) and the

United States armed forces (6: 75) both show that preparation of a class for viewing a film increases the learning value of the film.

In order to further assist the students in selecting the appropriate stimuli to observe, several utilization aids can be "built-in" to the film. The most common of these is the sound track on a sound film. The narration and sound effects direct audience attention to particular aspects. With the advent of magnetic recording projectors, it is now possible for the individual teacher to make his own sound track and "custom design" the narration to meet the particular needs of his group and teaching purpose. Many photographic techniques are especially useful in isolating the significant stimulus: the full screen close-up and the zoom into a full screen close-up; verbal labels for items on the screen; the superimposed word or image; color; superimposed attention-directing devices such as arrows and circles; juxtaposition of two items for comparison; stop action, slow motion, and time-lapse photography; animation; and others. Such approaches and devices tend to limit the range of purposes for which a film can be used, but also tend to increase its effectiveness for the few specific purposes for which it was designed because of clearer identification of the significant stimulus.

Projection techniques that are sometimes useful in helping pupils identify the significant stimulus are repeated showings, the use of single frames projected as still pictures, running the film in reverse, and repetitive film loops.

SUMMARY

A sound motion picture presents a multitude of complicated patterns of stimuli which are capable of being perceived in many different ways by the same individual and by different individuals. Without instructions on what to look for the pupil will automatically structure the situation according to his own background of experience, frame of reference, and set at the moment. What is naturally prepotent for each individual pupil may or may not be relevant to the purpose for which the film is being shown. In order to secure reasonably uniform perception of the significant stimulus, the teacher must assist the pupils in identifying and structuring the significant stimulus. If the pupils know what to look for, they are more likely to find it. A variety of techniques are available for directing observation.

REFERENCES

1. BUSWELL, GUY T. *How People Look at Pictures.* Chicago: University of Chicago Press, 1935.
2. GIBSON, ELEANOR J., AND MCGARVEY, HULDA R. "Experimental Studies of Thought and Reasoning." *Psychological Bulletin* 34:327-50; June, 1937.
3. HILGARD, ERNEST R. *Theories of Learning.* New York: Appleton-Century-Crofts, 1948.
4. HOBAN, CHARLES F., JR., AND VAN ORMER, EDWARD B. *Instructional Film Research (Rapid Mass Learning) 1918-1950.* Technical Report, No. SDC 269-7-19, Pennsylvania State College Instructional Film Research Program. Port Washington, L. I., N. Y.: Special Devices Center, 1951.
5. MCGEOCH, JOHN A., AND IRION, ARTHUR L. *The Psychology of Human Learning.* (Second Edition). New York: Longmans, Green, 1952.
6. MILES, JOHN R., AND SPAIN, CHARLES R. *Audio-Visual Aids in the Armed Services.* Washington: American Council on Education, 1947.
7. PRATT, CARROLL C. "Experimental Studies of Thought and Reasoning," *Psychological Bulletin* 25:550-61; September, 1928.
8. WITTICH, WALTER A., AND FOWLKES, JOHN GUY. *Audio-Visual Paths to Learning.* New York: Harper, 1946.

HISTORICAL OVERVIEW OF AUDIO-VISUAL COMMUNICATION

•PAUL SAETTLER

Basic to an appreciation of the audio-visual movement is an understanding of its historical development. Dr. Saettler is Training Aids Specialist for Northrop Aircraft in Hawthorne, California. The study from which this paper is drawn was completed for the PhD degree at the University of Southern California.

As an introduction to the first of a series of papers designed to provide an historical account of the audio-visual communication movement, this paper will present a general overview of its expansive boundaries. Even the most cursory of examinations will make one instantaneously aware of the complex and extensive nature of this field. Inevitably, too, a number of formidable barriers will undoubtedly be encountered in tracing its diverse historical rivulets. Rather than a systematic whole, one is confronted with evidences of disparate, circumscribed segments.

One method of resolving an historical synthesis of this field is to examine closely five of the primary tributaries flowing into the audio-visual communication stream. These can be arbitrarily classified as: (a) early legacy, (b) visual education, (c) radio education, (d) educational television, and (e) the communications movement.

EARLY LEGACY

Pictorial images have been utilized as communicative media since the time of the remarkable creative men of Upper Paleolithic France and Italy, and down thru Egyptian, Greek, and Roman times.

Both Cicero and Seneca approved of visual forms in instruction; while, Quintilian and Saint Jerome recognized the value of

object materials by their teaching of the alphabet with the aid of blocks. Through at least five centuries, marionettes enacted the roles of the Holy Family, of saints and martyrs, and of angels and demons. During the middle ages, the church used such visual stimuli as stained glass windows, relics, candles, bells, vestments, and the rosary to teach its religious lessons.

It was not, however, until the Renaissance that the visual-sensory concept began to flourish. A new, natural art developed in contrast to the old stilted and ascetic type; travel and discovery prospered; and modern technology unfolded with the invention of a process for making paper and movable type. The technological frame of reference of the audio-visual communication movement has extended unbroken from the time of the Italian Renaissance with such wondrous technical achievements as modern engraved and multi-colored illustrations, photography, motion pictures, radio and television.

Meanwhile, in the midst of this scientific Renaissance, Johann Amos Comenius in his famous *Orbus Pictus* led a group of realists in proclaiming that the senses were the real basis for all learning. Likewise, other great teachers joined Comenius in his emphasis upon the senses as an avenue to knowledge. For example, August Francke employed *Realien* to facilitate instruction, while Johann Basedow stated in his *Elementarwerk* that a liberal use of objects, pictures, and models should be always used in teaching. Jean Jacques Rousseau brilliantly impressed the visual-sensory methodology of instruction by stressing a natural environment for the child. Following in this same tradition, such men as Johann Pestalozzi, Johann Herbart, and Friedrich Froebel were influential in vitalizing the so-called "object-teaching" movement. This development later gave birth to such allied movements as the school excursion, nature study, manual training, and Oswego movements —all significant historical threads in the evolution of the audio-visual communication movement.

VISUAL EDUCATION

One of the most intrinsically important threads crisscrossing the audio-visual communication warp has been the emergence of the visual-education movement. Primarily, five lines of growth have marked this development. These have been: (a) the school museum movement, (b) university-extension movement, (c) organization of visual-education bureaus in city public-school sys-

tems, (d) development of the nontheatrical film, and (e) rise of commercial enterprises in visual education.

The formative or early developmental stage of visual education occurred approximately during the 1918-1928 decade. Visual-education organizations of a professional nature were formed, visual-education journals were published, and the first teacher-training courses in visual education were offered. Furthermore, this new, promising field won a modicum of academic respectability when a series of scientific studies were launched to probe the learning efficiency of films. Perhaps, the most distinguishing and singularly important development of this period was the remarkable growth of commercial educational film producers. This trend was further accelerated by the technical refinement of a 16mm motion-picture projector in 1923. Simultaneously, many educators became genuinely enthusiastic about what they considered to be the tremendous possibilities of instructional films. However, this feeling was dissipated rather rapidly when it became apparent that the available supply of acceptable films was extremely limited, and that the cost of securing films and projecting equipment was much too exorbitant for the average school. This dilemma was further aggravated by the fact that a decreased demand for films necessarily resulted because little or no effort was made to provide for the training of teachers in utilization procedures. As a consequence, an unusually large number of commercial educational film producers met with failure during this period.

The years, 1928 to 1941, fix the limits for what can be termed the later developmental period. During this interval, visual education was considerably vitalized by the introduction of the instructional sound film and the appearance of the 16mm sound-on-film projector. Its success in the theatrical field, particularly, inspired some notable early efforts in the production of educational sound films.

In the meantime, a number of significant audio-visual projects were initiated by both governmental agencies and nationally known educational organizations. For the first time on a national scale, important distribution, production, and research centers were established, vigorous programs of teacher training in classroom utilization were begun, and feature theatrical films were excerpted for school use. Primarily, the later developmental period was a time of intense experimentation in order to determine the role which audio-visual materials could play in the educative process. Even though these ambitious projects did not produce any immedi-

ate changes in the schools, they did succeed in generating a widespread interest in the educational potential of the field, and in substantially preparing the way for the effective use of audio-visual materials during World War II.

In the dawn of the post-war years, visual education was catapulted into what can be termed an expansionist era. The impact of the war experiences in the use of visual-sensory materials hastened the crystallization of the audio-visual concept in both public schools and in industry. Hardly had the fury of war abated than an astounding growth in audio-visual administrative units on city, county, and state levels began to take place. A similar tempo was reflected by the increase of film libraries; the intensification of commercial activity in educational film, filmstrips, and textfilms; and by the improvement of audio-visual equipment, materials, and methods.

RADIO EDUCATION

The history of radio education can be definitively approached in terms of three broad periods: the experimental, the developmental, and the transitional.

The experimental period, lasting from 1920 to 1927, began with the licensing of broadcasting stations by educational institutions and with the founding of experimental schools of the air by both public and private educational agencies. In the large majority, these pioneer educational stations were built for experimental purposes by engineering or physics departments. Consequently, practically no efforts were made to maintain modern broadcasting practices. Small sums were provided for the maintenance of equipment, studios, and programing; but it was totally inadequate to forestall the competition of the ever increasing commercial stations or the unrelenting technical demands of the Federal Radio Commission.

Among the most successful of the early schools of the air were those sponsored by such public school systems as New York, Oakland, and Cleveland. Undoubtedly, the Ohio School of the Air of the Ohio State Department of Education was one of the most uniquely ambitious and inspiring radio education projects undertaken. However, these and many other similar schools of the air were constantly beset with unsurmountable problems of financial support and the paralyzing indifference of an overwhelming number of educators.

When it became obvious that educational radio stations were being forced to suspend operations, some influential committees and organizations were established for the purpose of supporting and promoting the cause of educational radio. Unfortunately, however, an era of controversy began when a growing antagonism arose between groups of educators and between educators and commercial broadcasters. It was felt by one group of educators that the commercial radio networks and certain individual stations were not favorably disposed toward the development of educational broadcasting. Therefore, this group demanded that a share of the broadcasting frequencies be set aside for educational purposes or that a separate government-operated broadcasting network modeled on the British system be organized. The other group of educators opposed these plans and contended that the commercial networks were cooperative in educational broadcasting. In any event, after some six years of controversy, some of the conflict was temporarily resolved or forced underground by the formation of a committee composed of prominent representatives of both the commercial broadcasters and of leading educational organizations.

The real growth of radio education occurred during the developmental period (1928-1941). Local, regional, national, and international schools of the air were established, meetings were held, institutes were formed, scientific radio research was initiated, and formal courses in radio education began to be offered by educational institutions of higher learning. Also, it was during this period that the Board of Education-owned radio station, state-wide school broadcasting, and educational FM stations were developed.

Since the beginning of the post-war period, radio education has been in a transitional phase of its history. The impact of educational television, the decline of educational FM broadcasting stations, and the contraction of courses offered in radio education—all this has propelled radio education into an uncertain, indecisive stage. Even today there are still no clear indications of how radio education will be ultimately affected by these changing currents. In any case, there remains a positive element in radio education today. Most significantly, radio education has discovered its real role and its true function as exemplified in the Allerton House Conferences, in the development of community sponsored stations, and in the formation of a national educational tape recording network.

EDUCATIONAL TELEVISION

The educational possibilities of television have long been recognized by many educators. Even as early as 1934, the State University of Iowa began producing a series of experimental educational television programs. Four years later, Purdue University began operating an experimental television station, and the first educational television demonstration was held by a national radio network. In 1944, John W. Studebaker, former United States Commissioner of Education, sensed the potentialities of the television medium by requesting the Federal Communications Commission to set aside two television channels in all broadcast areas for the purpose of education.

It was not, however, until five years later that the Federal Communications Commission took any official notice of educational television. On July 8, 1949, the Commission issued a "Notice of Further Proposed Rule Making" which indicated that the question of reservation of television channels for education would be treated as a specific issue in its series of hearings. A short time later, on August 26, 1949, the United States Office of Education filed a "Notice of Appearance and Comments" which proposed that witnesses representing the Office of Education would present evidence to show the need of setting aside ultra-high frequency television channels for the use of school systems, colleges, and universities.

Meanwhile, the first concerted effort by educators for the formal organization of educational television was made in 1950 when an ad hoc Joint Committee on Educational Television was formed by the representatives of eight leading educational groups in the United States. This Committee worked for the allocation of frequencies in both the VHF and UHF bands and served as an exchange and information center for educators in regard to the complicated procedures whereby frequencies might be allocated to the needs of education.

The first of a series of three hearings on the question of the reservation of television channels for education began on November 27, 1950 before the Federal Communications Commission. Testimony was heard from over 100 educators, public officials, commercial broadcasters, and others interested in educational television. All witnesses for education unanimously rejected the idea that utilization of commercial stations could meet the growing demands for educational programing.

On March 26, 1951, the Federal Communications Commission took the first positive action when it proposed that 10 percent, or 209 channels, be allocated for educational television stations. Finally, on April 14, 1952, educational television received its first real impetus when the Commission announced that it had reserved 242 channels for non-commercial educational use.

Although the majority of public school systems, colleges, and universities had assiduously united to foster the allocation of television channels for education, they were caught unprepared for action. As a consequence, the American Council on Education sponsored the first national *Educational Television Programs Institute* at Pennsylvania State College on April 20-24, 1952, so that educational telecasters might "gain greater understanding of the role of television, both through educational and commercial channels, in the total educational process." A few months later, a notable state conference on educational television was held in California, and leading educators throughout the country began to organize state committees for the purpose of seeking legislative support for state-wide educational television networks. By February 15, 1954, 45 applications had been filed by educational institutions and groups for reserved channels, and two for non-reserved channels. Three stations: at Houston, Texas, Los Angeles, California, and East Lansing, Michigan, had begun broadcasting.

Even though educational television has made considerable progress in recent years, many enthusiastic supporters of educational television are fearful that educators will ultimately cast their new found prodigy aside. Recent legislative defeats for educational television in New York and California, for example, may be the beginning of a trend toward a duplication of the pattern of radio education history. Indeed, it would be tragically unfortunate if educational television were eventually relegated to an inconsequential role in our educational system solely because of financial malnutrition.

COMMUNICATIONS MOVEMENT

Within the last two decades, a new, dynamic current of audio-visual communication has developed. Essentially, this movement has its roots in the investigations of experts in social psychology, sociology, advertising, journalism, library science, radio, motion pictures, public opinion, reading, political science, propaganda, literary analysis, and anthropology. Now, after a long incubation

period, these diverse rivulets are beginning to converge and cohere into a systematic discipline.

The most outstanding focal points in this development have been the committees and institutes on communications at the Universities of Chicago, Columbia, Harvard, Princeton, Yale, Illinois, Michigan, Denver, and Ohio State. Of particular significance has been the establishment of divisions and departments of communications, communications centers, graduate communications programs leading to advanced degrees, and the growth of communications research centers.

In the early 30's, John Marshall of the Rockefeller Foundation became acutely aware of the need of logically combining the many distinctive elements which had developed in the various fields of the social sciences and the humanities. For example, a theory of communication was needed to integrate effectively the Payne Fund studies, Gallup's polling methods, Lasswell's propaganda analysis, Rosten's institutional investigations, and the impressive stream of statistical listening data supplied by the radio industry.

In recent years, a number of theoretical contributions have advanced the development of a general philosophical framework of communications. Education has contributed in its research on the transmission of factual information. Kurt Lewin's strategic and tactical procedures of group discussions, the elaborate cybernetics calculations of Norbert Wiener, and the relatively undeveloped fields of semantics and psychotherapy have proved to be fruitful sources of communication hypotheses. In addition, significant concepts have emanated from an analysis of communications problems in industry.

The basic problem confronting the communications theorist today is not a paucity of hypotheses, but a lack of a comprehensive theoretical structure. Progress toward the solution of this perennial communications problem has been made easier by the work already performed in the psychology of learning and in the development of sociological and anthropological theories relating to communications. With improved techniques in the analysis of content and the increased availability of communications experience, the prospects are bright that substantial progress will be made in communications theory and methodology in the various communications centers before many more years have passed.

REFERENCES

1. ATKINSON, C. *Development of Radio Education Policies in American Public School Systems.* Boston: Meador, 1939.
2. DARROW, B. H. "The Origin and Growth of the Ohio School of the Air." (Typewritten)
3. ELLIS, D. C., and THORNBOROUGH, L. *Motion Pictures in Education.* New York, Crowell, 1923.
4. FROST, S. E., JR. *Education's Own Stations.* Chicago: University of Chicago Press, 1937.
5. HILL, F. E. *Tune in For Education.* New York: National Committee on Education by Radio, 1942.
6. HOGBEN, L. *From Cave Painting to Comic Strip.* New York: Chanticleer Press, 1949.
7. INSTRUCTIONAL FILM RESEARCH 1918-1950 (Rapid Mass Learning), Technical Report No. SDC 269-7-19. Port Washington, L. I., New York: Special Devices Center, 1950.
8. JACOBS, L. *The Rise of the American Film.* New York: Harcourt, Brace, 1939.
9. KOON, C. M. *Development and Appraisal of Classroom Instruction by Radio.* Columbus, Ohio: Ohio State University, 1931. (Typewritten)
10. KROWS, A. E. "A Quarter-Century of Non-Theatrical Films." *Educational Screen.* 15: 169-173; 1936.
11. LAZARSFELD, P. F., and STANTON, F. N. *Communications Research 1948-1949.* New York: Prentice-Hall, 1949.
12. MC CLUSKY, F. D. *The Administration of Visual Education, a National Survey.* (Unpublished report made to the National Education Association) 1923.
13. MC CLUSKY, F. D. *Visual Instruction: Its Values and Needs.* New York: Mancall Publishing Company, 1932.
14. MC CLUSKY, F. D. *Motion Pictures for the Schools.* (Unpublished report made to the Rockefeller Foundation) 1937.
15. MILES, J. R., and SPAIN, C. E. *Audio-Visual Aids in the Armed Services.* Washington, D. C.: American Council on Education, 1947.
16. PARKER, S. C. *The History of Modern Elementary Education.* Boston: Ginn, 1912.
17. SAETTLER, P. *The Origin and Development of Audio-Visual Communication in Education in the United States.* Los Angeles, Calif: University of Southern California, 1953. (Typewritten)
18. SCHRAMM, W., editor. *Communications in Modern Society.* Urbana: University of Illinois Press, 1948.
19. SHAYON, R. L. *Television and Our Children.* New York: Longmans, Green, 1951.
20. SKINNER, G. A. *A Short History of the Educational Motion Picture Organizations Which Have Been Projected During the Past Twenty-Five Years.* (Typewritten)
21. TELEVISION IN EDUCATION, A Summary Report of the Educational Television Programs Institute held at Pennsylvania State College, April 20-24, 1952. Washington: American Council on Education, 1952.
22. THE GOVERNOR'S CONFERENCE ON EDUCATIONAL TELEVISION, December 15-16, 1952. Sacramento: California State Printing Office, 1953.
23. WEBER, J. J. *Visual Aids in Education.* Valparaiso: Valparaiso University Press, 1930.

EDUCATIONAL TV AND COMMUNITY SERVICE

•RICHARD R. WILLEY

•F. J. VAN BORTEL

That educational TV stations have a community special service to perform there is no doubt. How this service function might be carried out is discussed in this brief paper. Richard R. Willey is Executive Assistant to the American Psychological Association. F. J. Van Bortel is with the Committee on Human Development at the University of Chicago.

THE MOST important obligation of educators in a democratic society is the maximum utilization of every possible means to achieve intellectual growth in its individual members. We are now presented with a new communication device with almost unlimited possibilities for the achievement of this goal. With the allotment of channels for educational television a direct contact between educators and the individual in the American home has been established.

In estimating the potential success of an educational television station, we must take account of three general factors: the resources of the community, the educational and avocational needs and capacities of its citizens, and the adequacy with which these needs are fulfilled and capacities utilized by the particular station.

The resources of the major metropolitan centers of the country are unquestionably adequate to sustain an educational center. The demand for adult education is attested by public response to educational TV programs which have been sponsored already by public and private universities and presented on commercial stations. The primary determinant of the success of an educational station then, may well be the effectiveness with which it utilizes the unique advantages it can offer its viewing audience.

What are these unique advantages? Educational TV can offer programs of high quality without obnoxious commercials, but these

possibilities are equally available to the commercial networks. Educational television must certainly be founded on more than the elimination of some objectionable qualities of commercial broadcasting. We must devote our attention to those unique features which will permit educational TV to prosper in open competition with established stations.

Education is an established road to social and economic improvement for the individual and the advantages of educational television stem directly from that fact. The first of these advantages is *authenticity*. The very institutions which will exercise control of educational TV are primary sources of authentic information. The faculties, research and prestige of sponsoring institutions can provide this guarantee. Recognized authorities in almost every field are available for consultation.

A second advantage educational stations have is the opportunity to promote *community integration*. Educational stations are in close contact with constructive social and civic activities within the community. Educational TV is in a unique position to utilize these special interest groups within the community to command interest and, in turn, to implement thereby the growth and development of such groups.

A third important advantage enjoyed by educational TV will lie in its ability to *follow through*. The institutions which will develop educational TV can expect to stimulate viewer interest and participation beyond the programming schedule. This will be achieved both by televising formal academic courses and by carefully designing programs to stimulate the viewer to take initiative in expressing himself in affairs of government, public welfare, the fine arts, avocations, and other activities which constitute intelligent citizenship. A Special Services adjunct to the station can implement these objectives and thereby also insure the active participation of the community in the success of the educational station.

A Special Services adjunct to educational television might perform the following functions:

1. *Provide educational materials and information to supplement regular telecasting activities.*

The provision of educational materials to supplement its programming should become one of the distinguishing features of such a station. We may note well the success of many state universities in securing the active support of their communities by such services as these. Such materials might range from recommended

bibliographies and texts to the provision of means for student participation in course work and evaluation, depending upon the policies of the station. In addition, these services offer a potential source of financial support for the educational station.

2. *Continuously evaluate audience need, participation, and approval.*

The educational TV station must keep a more sensitive finger on the pulse of its audience than commercial stations. This is not merely a matter of taking a Gallup poll now and then. Such a service in conjunction with the educational station must substitute in part for prior production experience; it must provide a week-to-week feed-back on the educational "level" of programs, extent of audience participation and receptivity, effectiveness of presentation, technical perfection, etc. It must provide sound data on the proper balance of programming of formal classroom teaching, films, music, science, the creative arts, literature, world events, politics, and so on.

While such a service might depend in part upon data from services rendered under "1" above, it will require the additional ingenuity of persons familiar with sociological and psychological assessment, and conversant with the breadth and scope of available programming resources.

3. *Continuously survey and recruit the educational resources of the metropolitan center in accordance with this audience need and the policies of the station.*

This function, the recruitment of the educational resources of a community will require tact and resourcefulness and must be coordinated with inter-station network programming plans. It will require that the prestige of the station be unquestioned, and that the initial doubts and misgivings of professional individuals be sympathetically understood. It will require dealing, in some cases, with the direct competition of commercial television, and with the production limitations imposed by economic stringencies. It will require the tactful evaluation of the television aptitudes of many individuals unfamiliar with public appearances, plus an appreciation of these individuals' skills in teaching (in its broadest sense) at a level and in a manner appropriate for adult education.

And it will require a large quota of "leg work."

COLOR vs. BLACK AND WHITE IN INSTRUCTIONAL FILMS

•A. W. VANDERMEER

The relative effectiveness of color and black and white films in instruction has long been a concern of AV educators. This paper reports two experiments that present further evidence on the problem. A. W. VanderMeer is Professor of Education at The Pennsylvania State University and a member of the Instructional Film Research Program which is sponsored jointly by the Departments of the Army and Navy through the Special Devices Center, Office of Naval Research. The present article is based on research reported to the sponsors in Human Engineering Report SDC 269-7-28.

THE PURPOSE of the investigation reported in this article was to test the validity of three common reasons for using color in selected instructional films. The three reasons to be investigated are as follows:

1. Color may be an important cue in learning what the film is intended to teach; for example, a film to teach the identification of poisonous snakes of the United States might be made in color if the color of the snakes is an important cue in identifying them.

2. Contrasting colors in graphic presentations could be used for emphasis to make certain things stand out; for example, in an animated diagram of the Frasch Process for mining sulphur the steam pipes might be colored bright blue and the pipes carrying molten sulphur might be bright orange. These contrasting colors might suggest certain characteristics of what was being shown, and they certainly should make the various parts stand out clearly.

3. Color may be pleasing to the learner, and its aesthetic appeal may have an indirect effect in promoting greater learning, even though the color itself provides neither important meaningful cues nor emphasis.

EXPERIMENTAL DESIGN

The investigation consisted of two separate experiments.

The first experiment: Five films in color were shown at successive class meetings to approximately one-half of the 500 ninth and tenth grade students in science classes at Bellefonte (Pennsylvania) High School. Black and white prints of the color originals of the same five films were shown during the same time to the other half of the students in these classes. Tests were administered immediately after each film showing, and a combined test covering all five films was administered six weeks after the final film showing. Before the film showings the same combined test covering all five films and The California Test of Mental Maturity were administered. These scores were used for equating boys and girls separately by means of a multiple regression equation.

The second experiment: An alternation technique for showing the films was used in the second experiment which was conducted nearly a year after the first experiment. Four of the five color films used in the first experiment and their black and white counterparts were used. The six ninth grade general science sections of approximately 40 students each, were numbered from one through six. Odd-numbered sections saw color prints of films A and C, and black and white prints of films B and D. Even-numbered sections saw color prints of films B and D, and black and white prints of films A and C.

In this second experiment tests were administered immediately after each film showing but no delayed recall tests were given. Scores on the four film tests were converted into standard scores. Comparisons were made between the means of combined standard scores on the four color film versions and the means of the combined standard scores on the black and white film versions for each sex group. This procedure eliminated the necessity for equating groups since each section contributed equally to the combined color film mean score and to the combined black and white film score.

All film showings in both experiments were conducted on a "film a day" basis in the regular science classroom and at the usual class meeting time.

The Films

Five films were used in the first experiment:

1. *Maps Are Fun*
2. *How Man Made Day*

3. *Rivers of the Pacific Slope*
4. *Snakes*
5. *Sulphur and its Compounds.*

All were approximately one reel (400 feet) in length, and were produced by Coronet Instructional Films.

Each film had been produced originally in color with a view to the later production and distribution of black and white prints from the color original.

In the second experiment the same films were used, except that *Maps Are Fun* was omitted, because an even number of films were required, and because this film was the least appropriate of the original five films in terms of the science curriculum in which the experiments were conducted.

The Tests

Two types of tests of perceptual and conceptual learning were developed for each film:

Non-verbal tests. Some films lent themselves to the use of pictures, diagrams, or samples as supplements to the verbal questions or statements. For convenience these tests will be referred to as "non-verbal" tests to distinguish them from the purely verbal tests. Three groups of these visually supplemented test items were administered as separate parts of certain film tests as follows:

1. In connection with *Rivers of the Pacific Slope,* an outline map of the Western United States was given each learner. Rivers on the map were numbered. The learner was asked to match the name of the river with the number which gave its location on the map. His score was the number of correct matchings.

2. In connection with *Sulphur and its Compounds,* each learner was given a set of six sealed and numbered glass vials. Each vial contained either one of two forms of sulphur or a similar-appearing substance. A multiple-choice question was made for each vial, such as:

"Vial number 1 contains:
1. Rhombic Sulphur
2. Amorphous Sulphur
3. Dry Mustard
4. Molasses
5. None of the above substances."

3. A second viewing of *Snakes* was followed by a test in which slide pictures of snakes were projected on a screen. Each picture was accompanied by a test item, such as:

"Slide No. 1 shows a:
1. Hog-nosed snake
2. Water moccasin
3. Rattlesnake
4. Copperhead
5. None of the above snakes."

The slides were not made directly from "frames" from the film, but had been independently prepared by various scientific supply companies. Altogether, 28 pictures of 14 different snakes (not all of which appeared in the film) were used in the test. In addition, three slides of general landscapes were shown and the learners were asked to indicate which of several snakes would be likely to be found in such a place.

Verbal tests. In contrast to the non-verbal tests, the larger number of items were of the conventional multiple-choice type in which the learner was required to select a response in terms of completing a purely verbal statement or answering a purely verbal question. The same tests were used as pre-test, post-test and delayed recall measures, except that the items were arranged in different orders.

As each test item was developed, it was designated as relating to one of the previously mentioned reasons for using color in film production. The validity of these distinctions among items was checked by independent viewings of films to determine the type of use to which color was put at the point or points in the films where the requisite data for the correct answering of each test item was given.

As a partial additional check of the validity of the aforementioned distinctions among test items, each item was further classified in terms of the location of the data required to respond correctly to it. That is, test items were classified as to whether the source of their correct answer was in (a) the film commentary but not the pictorial content, (b) the pictorial content but not the commentary, or (c) both the commentary *and* pictorial content.

This classification process made it possible for each test to yield seven scores: a total score, three part scores related to various uses of color in films, and three part scores related to the source

of the information (commentary, pictorial, or both) required for correct response to test items. The sum of either set of three part scores equalled the total score. Table 1 shows the make up of each test in terms of these part scores.

Measure of "liking." In order to find out whether there were differences in liking for films in general between (a) the group which was to see films in black and white and (b) the group which was to see films in color, an "index film" in color, *Five Colorful Birds,* was shown to both groups. The students rated on a scale the degree to which they liked this film. A comparison of the average ratings of the two groups showed that the two groups were substantially equal in their liking for this film (see Table 6). Subsequently, students were asked to rate each of the films they saw on a like-dislike scale, using the index film rating as a point of reference. Differences between black and white and color groups in average liking for these other films used in the experiment could, then, be attributed to the color factor.

In the second experiment, a paired comparison technique was also used to determine the extent to which color contributed to the learners liking for the film. Each student compared each film version he saw with every other film version that he saw. From these paired comparisons it was possible to compute the "average number of films which each film was liked better than" when the film was seen in color and when it was seen in black and white. Presumably the differences in these averages were related to the contribution that color made to the liking for a film.

RESULTS

First Experiment

Table 2 shows the extent to which learning took place and was retained, as measured by each of the verbal and non-verbal tests, for black and white and color groups combined.

Scores on verbal tests. Table 3 shows significance of differences on verbal tests between (a) groups which saw films in color and (b) groups which saw films in black and white. From this table we can see that on the immediate recall tests there is only one significant difference in learning, and this difference favors the group which saw the color version of *Properties of Sulphur* over the group which saw the black and white version of the same film. Although none of the differences in mean scores on immediate recall tests based on the other films was significant,

TABLE 1—COMPOSITION OF TESTS ON LEARNING FROM COLOR AND BLACK AND WHITE FILMS

Film Test	Test Reliability*	Number of Items	Source of Items (answers appear in)			Type of use of color (color is used for) Emphasizing		
			Commentary Only	Pictorial Only	Both	Intrinsic Appearance	Parts or Places	Aesthetic Appeal
Maps Are Fun	.695	29	2	5	22	2	15	12
Snakes								
Verbal Items	.795	47	21	9	17	5	..	42
Identification of Slides	.273	31	..	..	31	31	..	..
Sulphur								
Verbal Items	.643	52	16	9	27	5	17	30
Identification of Samples in Vials	–.044	6	..	..	6	6	..	..
How Man Made Day	.612	34	18	5	11	..	3	31
Rivers of the Pacific Slope								
Verbal Items	.737	52	27	11	14	4	11	37
Location of Rivers on Map	.456	5	..	..	5	..	5	..

* According to the Kuder-Richardson Formula, No. 21, which estimates the *lower limit* of reliability. Garrett, Henry "Statistics in Education and Psychology." Longmans, Green, 1949. p. 385-86.

TABLE 2—COMBINED MEAN SCORES (BLACK AND WHITE AND COLOR) AND STANDARD DEVIATIONS ON PRE-TESTS, IMMEDIATE RECALL, AND DELAYED RECALL ON TESTS (FIRST EXPERIMENT)

Tests on Films	Number Cases	Number Items	Pre-Test Mean	Pre-Test Sigma	Immediate Recall Mean	Immediate Recall Sigma	Delayed Recall 6 weeks Mean	Delayed Recall 6 weeks Sigma
Verbal Tests								
Maps	251	29	14.5	5.09	23.9	3.58	19.5	5.65
Rivers	243	52	12.2	5.57	26.3	6.85	19.0	6.58
Sulphur	262	52	15.9	4.46	24.4	5.92	19.6	5.35
Snakes	259	47	17.4	5.13	30.0	7.00	24.7	8.34
How Man Made Day	262	34	11.7	4.00	20.3	4.49	15.4	5.44
Non-Verbal Tests								
Snake Slides	242	31	11.2	2.07	12.4	3.18	12.9	3.31
River Locations	206	5	1.78	1.43	3.02	1.37	1.97	1.54
Samples of Forms of Sulphur	302	6	....	....	1.87	1.11	....	....

TABLE 3—SIGNIFICANCE OF DIFFERENCES[1] ON VERBAL TESTS BETWEEN GROUPS WHICH SAW FILMS IN COLOR AND GROUPS WHICH SAW FILMS IN BLACK AND WHITE (FIRST EXPERIMENT)

Title of Film	N C	N BW	t-Ratios[2] Immediate Recall Tests	t-Ratios[2] Delayed Recall Tests
Maps Are Fun	114	137	−1.13	− .41
Rivers of the Pacific Slope	108	135	.69	1.28
Properties of Sulphur	112	150	1.99*	2.65**
Snakes	115	144	− .29	3.04**
How Man Made Day	117	145	− .63	2.08*

[1] Adjusted for Intelligence Quotient (California Mental Maturity) and Subject Matter Pre-Test by Analysis of Covariance.

[2] Minus sign indicates that the difference favors the black and white versions.

* Significant at the 5.0 per cent level of confidence.

** Significant at the 1.0 per cent level of confidence.

three of the four favored the black and white versions. On delayed recall tests, however, three out of the five differences were significant, and all three favor the color group.

Scores on non-verbal tests. Table 4 shows results on tests that were primarily non-verbal. In every case the results on these identification tests administered immediately after the film showing favored the black and white versions over the color versions. In two instances these differences were highly significant.

TABLE 4—SIGNIFICANCE OF DIFFERENCES[1] (t-RATIOS) ON NON-VERBAL TESTS BETWEEN GROUPS WHICH SAW FILMS IN COLOR VERSUS GROUPS WHICH SAW FILMS IN BLACK AND WHITE (FIRST EXPERIMENT)

Title of Test	N C	N BW	t-Ratios[2] Immediate Recall	t-Ratios[2] Delayed Recall
Identification of Snake Slides	111	131	–1.01	– .29
Identification of River Locations on Outline Map	94	112	–2.62**	.59
Identification of Materials in Glass Vials. (Sulphur forms and distractors)	133	169	–2.67**	....

[1] Differences in the case of the first two tests were adjusted for Intelligence Quotient (California Mental Maturity) and Subject Matter Pre-Test by analysis of covariance. The difference in the case of the third test was adjusted for Intelligence Quotient only.

[2] Minus sign indicates that the difference favors the black and white version.

** Significant at the 1.0 per cent level.

Table 4 also shows that there were no significant differences between color and black and white film versions as measured by non-verbal tests administered six weeks after the films were shown.

In general, the results shown in Tables 2, 3, and 4 do not indicate any persistent superiority for color film versions over black and white. The results do suggest, however, that color contributes in reducing the rate of forgetting.

A number of possible explanations may be advanced for the poor showing of color on the results of the non-verbal tests. One is that the impact of color may be sufficiently strong to detract attention from other equally relevant and important learning cues. For example, the learner may be so impressed by the brilliant

yellow of rhombic sulphur as he sees it in a color film that he may fail to perceive the texture. On the other hand the learner who sees the same film in black and white and who is merely told in the commentary that rhombic sulphur is yellow may adopt a more cautious attitude based on a greater relative emphasis on the other properties of sulphur.

A second explanation is that the color films used in this experiment may not have presented the learner with the full range of colors that are associated with the objects shown in the films. For example, only one or two specimens of each snake were shown in the film *Snakes*. In reality, snakes of the same species vary rather widely in color both from one specimen to the next, and, for the same specimen, from one season to the next. The test slides on *Snakes*, as has been previously stated, were not taken from the film, but from other sources. It is possible, therefore, that a degree of negative transfer may have taken place when snakes of striking color as shown in the film were presented in the test slides as having somewhat different color.

It seems clear that while color in these films appeared to be an important cue, it was not a crucial cue, indispensable for learning. Other equally relevant cues appear to have contributed to learning to such an extent that in some cases color added little, if anything. Black and white films may be as good as color films in communicating visual learning cues related to texture, light and dark contrast, shape, and size. Color may, unless more carefully employed, actually operate to reduce the effectiveness of some of these cues by distracting the learner. The *absence* of color in black and white film may operate to increase the effectiveness of such cues by requiring more attention on the part of the learner to such cues as texture, contrast, shape and verbal descriptions.

Second Experiment

The second experiment confirms the results of the first, namely that insignificant differences seem to exist between color and black and white films in terms of the immediate recall facts learned from them as tested by the purely verbal tests. Delayed recall tests were not given in the second experiment. Table 5 shows that the critical ratio of differences on total test scores (expressed in standard scores) between black and white and color was only .21 for females and .65 for males. Comparisons based on sub-test scores bear out this lack of consistent significant differences. Of twelve comparisons made six favor color and six favor black and white.

TABLE 5—MEAN STANDARD SCORES AND STANDARD DEVIATIONS ON PARTS OF TESTS BASED ON ALL FOUR MOTION PICTURES (SECOND EXPERIMENT) IMMEDIATE RECALL

	Sex	N	No. Test Items	Mean b-w	Mean color	σ b-w	σ color	r bw-c	C. R.
Score	Fem	107	185	99.7944	100.0374	18.1899	17.7178	.768	.205
Total	Males	92		96.6196	100.4022	17.7964	18.9341	.804	.650
Items Answered	Fem	107	34	100.4299	99.7383	17.0925	15.4783	.399	– .400
In Video Only	Males	92		98.0761	102.0217	15.6644	16.7008	.475	2.279*
Items Answered	Fem	107	82	101.5888	98.7103	15.7194	16.6346	.589	–2.027*
In Audio Only	Males	92		99.3152	100.0217	17.3907	17.5822	.676	.481
Items Answered									
In both Audio	Fem	107	69	98.4579	101.8411	17.3865	16.2816	.640	2.444*
and Video	Males	92		100.8370	99.3261	16.5208	18.0567	.600	– .933
Items Showing No Obvious Use of									
Color Other	Fem	107	140	100.0748	99.9065	17.4611	17.4188	.691	–1.270
Than Aesthetic	Males	92		99.5978	100.3578	17.7802	18.2516	.758	.582
Items in which Color was used to									
Emphasize	Fem	107	31	98.4766	101.5888	17.5561	18.2064	.444	1.707*
Differences	Males	92		99.5000	100.2500	17.3290	18.5500	.428	.374
Items in which Color									
Is an Intrinsic	Fem	107	14	101.5888	98.5794	19.6749	15.1239	.174	–1.375
Learning Cue	Males	92		100.6739	98.6413	17.5228	18.3875	.356	– .956

* Significant at the 5.0 per cent level.

Table 5 shows no consistent pattern of sex differences. Females who saw color versions of films did significantly better on items answered in both audio and video and on items in which color was used to emphasize differences. Females who saw black and white versions did significantly better on items answered in the audio only. On the other hand, males who saw color versions did significantly better on items answered in the video only. With regard to items in which color was used to emphasize differences, both males and females who saw color versions of the films achieved higher mean scores than males and females who saw black and white versions. On items where color was an intrinsic learning cue, both males and females who saw black and white versions did better than those who saw color versions. This last finding is consistent with the results on non-verbal tests administered in the first experiment.

There were some significant sex differences in learning from black and white and color films. Males viewing color films scored significantly higher on test items taught by the pictures only, than did males viewing black and white films. Females learned more from the black and white films so far as items taught in the commentary only were concerned. On items taught by both pictures and commentary females who saw the color films did better than those who saw the black and white versions.

On the items in which color was used in the color films to emphasize differences (in maps and diagrams) both males and females who saw the color films did better than those who saw the black and white versions. However, this difference was significant for the females only.

Table 5 shows the number of test items related to each of the three uses of color in films. About three-fourths of the items were those in which color seemed to contribute only through aesthetic appeal. Color appears to have contributed significantly to the learning of only those items in which color was used to emphasize differences.

Summary: The second experiment confirms the results of the first experiment in that there were practically no overall significant differences in learning from black and white and color films as measured by tests administered immediately after each film showing.

Preferences for Films Related to Color and Subject Matter or Other Variables

Table 6 presents a considerable amount of evidence to support the conclusion that learners prefer color films to black and white films. In not a single one of nine comparisons did a group show a preference for black and white films. However significant differences in favor of color were found in only three comparisons.

TABLE 6—RATING OF FILMS LIKED BEST COMPARING BLACK AND WHITE AND COLOR VERSIONS

First Experiment

Film	N		Mean Scale Ratings[2] BW	Color	Sigma BW	Color	C. R.
Maps	141	185	10.91	11.54	3.42	2.26	1.86
Rivers	144	193	11.67	12.11	2.64	2.62	1.54
Sulphur	141	186	9.49	10.58	3.51	3.21	2.20**
Snakes	145	169	11.73	11.96	3.15	2.93	.67
Day	140	190	11.41	11.90	2.83	2.57	1.60
Birds[1]	148	197	12.53	12.70	2.20	2.21	.69

Second Experiment

Film	N		Mean Preference Rating BW	Color	Sigma BW	Color	C. R.
Rivers	95	77	2.44	2.91	1.14	1.13	.94
Sulphur	77	95	1.04	1.88	.06	1.16	2.40**
Snakes	77	95	1.74	3.11	1.56	1.08	2.54**
Day	95	77	1.72	2.05	1.03	.07	.98

[1] This film was actually shown *in color* to groups which would see only black and white versions of films subsequently, as a test of the equivalence of groups in rating this, the "index point" film.

[2] Rating on 13 point scale.

**Significant at the 1.0 per cent level of confidence.

Pearson correlation coefficients were computed between (a) the mean difference in a scale of liking for black and white and color versions of each of five motion pictures and (b) differences in learning gains as reflected in mean scores on pre-tests, immediate recall tests, and delayed recall tests based on the same five films.

Roughly, these correlations represent the relationship between (a) the contribution of the color factor to total liking of a film and (b) the difference in learning gain attributable to color. Neither of the correlations is large (.31 and —.46) and they are in opposite directions. It would appear from this that there is little relationship between degree of preference for color and learning gain attributable to color.

While color as a factor contributing to the overall "liking rating" of a film does not seem to add proportionally to the learning acquired from that film, there does seem to be a definite positive relationship between the (a) extent of "liking" that a group of learners indicates for a given film and (b) the amount they learn from it.

Sex Differences in Film Preferences Related to Color: It might be hypothesized that female film viewers would exhibit the more marked preference for color, since numerous studies on color discrimination and color vocabulary have revealed differences in favor of females. To test this hypothesis, a paired comparisons instrument to measure preferences for film versions was administered to the learners in the second experiment, and the resulting data were subject to an analysis of variance as described by Snedden.

The results confirmed the stronger preference for color films on the part of females but on the whole, these differences were not significant.

Males exhibited marked preference for color in the films on sulphur and snakes, while females exhibited marked preferences for color in *Rivers of the Pacific Slope* and *How Man Made Day.* Thus, the films liked better by each sex group are greatly preferred in color, whereas the films liked less by each sex group elicit no such marked preference. It would seem, therefore, that either the subject matter of the film or some factor peculiar to the particular film is of greater affective importance than the general fact of whether it is a color film or a black and white film. Further analysis of the data reveal that while the overall differences between the sexes was not great in terms of color versus black and white, it was very great in terms of which films they preferred.

Summary: The results of the study of film preferences may be summarized as follows:

1. Learners generally prefer color films to black and white films.

2. Color as a factor in preference for a given film version does not appear to correlate highly with differences in learning attributable to color.

3. There is not much difference between males and females in overall preference for color films. Subject matter is a more important factor in preference for a film.

CONCLUSIONS

The following conclusions seem to be supported by the data gathered in this study:

1. The use of color in instructional films which may superficially seem to "call for color" does not appear to be justified in terms of greater learning on the part of those who view the films. If color is to be used effectively in films there must be careful preproduction consideration of the probable psychological impact of specific uses of color upon the learner.

2. The contribution of color in film seems to be related more to the retention of learning than to the immediate acquisition of learning. Those who view color films may not learn more than those who view the same films in black and white but they are likely to forget less of what they learn than those who view the black and white films.

3. While "liking" for a film and learning from the film are probably positively related the influence of color in determining such liking is not great enough to warrant its use as a means of increasing liking and therewith increasing learning. The "aesthetic value" of color as a contribution to learning effectiveness appears to be less than that of the intrinsic appeal of the subject matter.

4. Sex differences with regard to preferences for and learning from color films are slight.

BOOK REVIEWS

HOVLAND, CARL I.; JANIS, IRVING L.; and KELLEY, HAROLD H. *Communication and Persuasion.* New Haven: Yale University Press, 1953. 315 p.

Reviewed by

•A. A. LUMSDAINE

Communication and Persuasion (subtitled *Psychological Studies of Opinion Change)* can be viewed either as a progress report on a particular research program or as a documented presentation of the state of the art of scientific inquiry into the psychology of persuasive communications. From either point of view the book is impressive. It will undoubtedly have a large readership and should exert a major influence on contemporary research and thinking in the area of mass-communication psychology. In this connection it is fortunate that, although much of the content deals with theoretical propositions and scientific data, the book is largely written in a readable, down to earth style, with both theory and experimental procedure presented in relatively non-technical terms and related closely to live practical issues.

The research program which gave rise to the Hovland-Janis-Kelley volume (hereafter abbreviated H-J-K) was set up at Yale University several years ago under a Rockefeller Foundation Grant to study the experimental modification of attitudes and opinions through communication, and is now established on a continuing basis as the Yale Communication Program. Although the scope and importance of the H-J-K volume far exceeds that of a mere programmatic historical report, an understanding of the nature and purpose of the Yale program is useful in comprehending the authors' orientation and contribution. The program is devoted primarily to coordinated, systematic research on variables governing the effects of persuasive communications. Three of the major

A. A. Lumsdaine is Technical Director of the Training Aids Research Laboratory, a component of the Air Force Personnel and Training Research Center. The opinions expressed herein are those of the reviewer and do not necessarily represent official views of the U. S. Air Force.

characteristics of the program, described by the authors in their introductory chapter, set the tone for both the program and the book. These are: (a) a primary concern with theoretical issues and basic research, as contrasted with directly "applied" or "action oriented" research; (b) a catholic utilization of theoretical developments and concepts from diverse sources within psychology and related sources—including Hullian S-R learning theory as well as Freudian and Lewinian theories and the various outgrowths and variants of these; and (c) an emphasis on the testing of propositions by controlled, analytic experiments rather than dependence on less incisive survey or correlational methods. An important distinction stressed by H-J-K relates the first to the third of these characteristics: namely, the fundamental distinction between controlled analytic experiments for testing scientific hypotheses, and the use of experimental techniques for evaluation of specific products or programs.

The strength of H-J-K's contribution depends to a marked extent on the three characteristics just noted, together with several other important features of their work. One of these is an emphasis on behavioral and/or operational definition of terms which commences with the authors' initial delineation of opinion change, in terms of change in implicit responses made by the individual, and underlies much of the subsequent presentation of theoretical argument and experimental investigation. Another important (and related) characteristic is a pervasive tendency to approach problems of communication effectiveness from the point of view of principles and concepts in the psychology of human learning and motivation. Although salient distinctions are clearly drawn between the problems of *instruction* (in which *learning* factors are paramount) and those of *persuasion* (in which factors related to *acceptance* may become dominant), the role of the learning factors is stressed appropriately and frequently in both theorization and analysis of experimental data in relation to the effectiveness of persuasion. Indicative of the scope of the authors' approach is the fact that a fair proportion of the pertinent literature covered comes from outside the communication-research field as usually conceived—some of it, especially in certain chapters, from psychological laboratory studies of learning.

A final important characteristic of the H-J-K book lies in its balanced but restrained attitude of caution in drawing conclusions from data, and of generally making explicit the limitations on both their generality and their conclusiveness. Although there are some minor variations in this respect in various parts of the book, there is a general uniformity and consistency that will probably please the tough-minded scientist while at the same time, by virtue of lucid writing, not leaving the technically unsophisticated reader in a hopeless muddle of confusing and inconsistent qualifications and

hedges. Moreover, the clarity with which the relations of evidence to interpretation (and distinctions as to which is which) are generally expressed by the authors does not appear in any way to inhibit the insightfulness and incisiveness of their theoretical speculation. Certainly it does not lead here to a barren "cookbook" empiricism, as some would appear to feel it must; instead, it contributes to the scientifically healthy kind of reciprocal interaction between theoretical speculation and empirical data which is so important for solid progress in communication science, yet relatively so rare in this area of research. The reviewer feels that the authors' success in this respect provides a stimulating example of the kind of approach of which we need a lot more. It also illustrates the ingredients needed to develop this approach successfully: theoretical insightfulness that leads to genuinely analytic experiments, coupled with a balanced conservatism and restraint in interpreting experimental results. In a word, what is seen here is evidence not only of sound intellectual discipline but, also, of talent.

It is perhaps only this kind of happy combination of attributes which is likely to lead us toward scientific principles of communication influence that are really deserving of the name. The probable character of such principles is recognized by the authors as consisting of qualified or contingent propositions in which the operation of one factor is expressed as a function of other related factors. This approach (as well as the limitations of the kind and amount of pertinent evidence currently available) is indicated in many places in H-J-K, including the following quotation (p. 114) from the authors' discussion of the evidence on the effectiveness of the "climax" vs. "anticlimax" order of arguments: "In view of the contradictory conclusions it is unlikely that one or the other order will turn out to be universally superior. Our interest is then in an analysis of the factors which will make either the climax or the anticlimax order more effective under a particular set of conditions. The factors and hypotheses discussed will be for the most part only suggestive, since the researches in this area do not yield direct information on theoretical variables."

It is symptomatic of the maturity of the authors' approach that contradictory findings, instead of being ignored or explained away, are generally used by H-J-K to point up a problem requiring redefinition and experimental clarification in terms of the operation of underlying factors. Similarly, general "laws" and sweeping "principles" which pertain to questions examined by H-J-K are introduced so as to furnish points of departure for dissection, reanalysis and framing of better-defined questions for currently reported or proposed research—rather than being sought as end products to be derived from their research. The tendency is to frame questions in specific, analytic terms—"Under what conditions do . . .?" "What are the factors underlying . . .?"—and to indicate

results of studies as "supporting" or "being compatible with" contingent hypotheses, rather than the tendency to "prove" "establish" or "discover" blanket "principles" or "laws."

The introductory chapter of H-J-K sets forth some points of perspective, outlines the nature and objective of the Yale program, and states the authors' assumptions concerning the nature of opinion change, persuasive communication, and factors in learning and retention that influence communication effectiveness. The final chapter, entitled "Summary and Emerging Problems," gives an excellent summary of the main experimental investigations described in earlier chapters, as well as outlining major directions along which the authors feel that intensive future research needs to be directed. Readers may find it useful to read this summary chapter before, as well as after, the seven topical chapters that deal with specific areas of investigation. The latter can be grouped, in terms of classes of factors studied, under four main rubrics distinguished by the authors. These classes of factors are those which influence the effectiveness of persuasive communications by reason of (a) the characteristics of the communicator (as perceived by the audience, of course)—treated in Chapter 2; (b) various aspects of the content or organization of communication itself—Chapters 3 and 4; (c) predisposing characteristics of the audience members that affect their susceptibility to being influenced by the communication —Chapters 5 and 6; and (d) factors in audience response during and subsequent to the presentation of the communication—Chapters 7 (on "audience participation") and 8 (retention of opinion change).

The chapters treating these various aspects of the total communication problem differ in terms of the dominant kinds of theoretical considerations utilized, the amount of available experimental evidence introduced and, to some extent, in the manner and extent in which practical problems, theoretical analysis, experimental analysis, and interpretive discussion of findings are presented and integrated. Differences among chapters in these respects probably mean that chapters will appeal differentially to readers of different backgrounds and interests. The reviewer's bias is such that he tended to find the theoretical discussion most rewarding in those chapters (e.g., 4, 8) in which the most experimental evidence is introduced and in which the data presented are most closely linked to the theorization.

As the authors point out, some of the inter-chapter differences reflect in some measure the rather wide differences in background and theoretical predilections among the authors who assumed general responsibility for preparation of various portions of the book. Despite this diversity, however, enough synthesis has been achieved through the authors' collaborative efforts to result in an integrated volume that is sufficiently uniform in terminology and perspective

to present a coherent picture. Contributing to this integration is the fact that the several classes of factors discussed are, wherever pertinent, treated in terms of their interactions with other classes of factors. Thus, chapters dealing primarily with communication content analyze effects in relation to audience factors, factors relating to the credibility of the communicator (Ch. 2) are related to audience predispositions, and chapters that focus on audience characteristics relate these to differences in communication content.

All of the seven topical chapters (or the major sections thereof) tend to follow a somewhat similar pattern, starting with a statement of a practical issue or question important in the design or use of persuasive communications, proceeding to a presentation or review and analysis of evidence from one or more past and/or current research studies, and then discussing both the tentative conclusions afforded by the evidence and the gaps in knowledge needing to be filled in by future work. In most cases both the existing gaps or limitations and the research needs are at least partially explicated in terms of specific hypotheses or suggestions for future investigation—as contrasted with the mere vague statements, so often encountered elsewhere, to the effect that "much further research in this area remains to be done." From one to seven pages of supplementary notes amplifying secondary or tangential points are presented at the end of each chapter, and references are listed separately by chapter. A comprehensive index for the book makes it relatively easy to locate work cited either by author's name or by topic. The tables and figures used in presenting data are generally clear and well labeled. One minor exception is found in the table on page 221, where the explanation of "sizable" opinion change may confuse the reader who does not have access to the original report to provide the wording of the criterion questions used in the study.

In utilizing an integrated topical organization rather than the study-per-chapter pattern, the authors draw on evidence from their own studies (and from those of others) wherever the evidence is relevant, with the result that data from some of the score or so of experimental studies done under the Yale program are cited in different places in a number of chapters. Given the topical organization of chapters, this is necessary because of the inevitable overlap in terms of interactions of different classes of factors discussed, and is useful because a number of the studies conducted were designed so as to afford evidence bearing on several different questions. The experimental designs do not, however, tend to be highly elaborate factorial ones set up for shotgun study of all possible interactions of a number of factors; rather, the experimental variations are generally confined to those required to test specific hypotheses suggested by theoretical considerations. Similarly, the analyses of data presented are specifically aimed for testing specific predic-

tions; t-tests of first or second order differences are accordingly presented rather than the generally less meaningful "cookbook" arrays of multitudinous primary and interaction variances. The statistical procedure adopted is well suited to the authors' tendency to cite only the relevant aspects of a given study in any particular context, deferring other aspects of the procedure or findings to later sections where they are most pertinent—a pattern which makes for clarity and directness of exposition.

As compared with an earlier volume of common senior authorship (Hovland, Lumsdaine and Sheffield's *Experiments on Mass Communication*—designated below as "H-L-S") the present book could be described as at once more "scholarly" and less "technical." On the one hand, although H-J-K make no attempt to "survey" the entire field of literature in the communication and attitude-opinion-change research area, the authors do draw much more freely than H-L-S on related literature by other investigators; extensive references for each chapter are given not only to this "outside" literature but also to previous and current journal publications of work done by members of the Yale program. On the other hand, there are no detailed technical appendices (such as those which comprise about a sixth of the H-L-S volume) and, although P-values and similar technical data are included by H-J-K in presenting results, details of statistical formulae and procedures are largely omitted in the interests of uninterrupted flow of continuity—a boon to the serious but technically untrained reader.

The technically more sophisticated reader of H-J-K will, however, notice a good deal of indirect "between the lines" evidence of the statistical and other methodological machinery that went into the results presented. He can generally amplify his knowledge of these details by consulting the supporting publications referenced by the authors, even though he may occasionally wish that the authors had given one or two more relevant details (e.g., specifying the basis for P-values in terms of unit vs. individual sampling statistics in those experiments which employed unit sampling). Among the interesting methodological techniques used to good effect by the authors and their associates, the student will note the use of "net percent of change" in opinion, and "net *sizable* change" percent changing opinion in a given direction by more than a specified minimum amount, less the percent changing in the opposite direction by more than this amount), as well as the frequent selection of experimental communication topics which permit relevant criterion questions to be asked in quantitative terms ("How long?" "How many?" etc.), so as to yield answers automatically affording the advantages of at least ordinal scaling of responses. A further crucial methodological aspect of the H-J-K experiments lies in the assurance that adequate precautions have been taken to minimize suppression and distortion tendencies of respondents, through

such means as careful "pre-testing" of criterion questions, assurance of respondents' anonymity, dissociation of test administrators from those having authority over the respondents and, usually, dissociation of communication from testing procedures through various techniques of camouflage and (where necessary) deceit. These factors warrant credence in the validity of the results which one would wish were universally possible, through compliance with what the authors are able to call "standard [for them] methodological precautions," but which are as yet, unhappily, far from standard in much other research in the opinion-attitude field.

Three additional points of comparison between H-J-K and H-L-S are instructive, and help to set the present book into relevant historical perspective. A previously noted distinction made in both books is that between the analytic experimental manipulation of specific factors in communication and the use of experimental techniques for applied evaluational purposes of assessing the effects of some particular communication. But whereas more than half of the work reported in H-L-S consisted of such purely evaluational studies, none of the experiments reported in H-J-K were conducted for this purpose. This difference, together with a similarly changed balance in extent of theory-oriented studies, reflects an important difference in the purpose and sponsorship of the two research programs from which the two books derive. The wartime research program on which H-L-S was based was set up primarily as a means of providing evaluative data to check the effectiveness of specific indoctrinational, educational, and training activities of the Army; any long-range contributions to communication science were largely viewed as by-products of this applied effort. The reviewer believes that the contrast between this type of objective and the systematically programmatic orientation of the later, foundation-supported work of H-J-K not only reflects the difference in sponsorship of the two programs but is indicative of maturation in prevailing concepts and terms of reference in communication research. Earlier research, even when foundation-supported, tended to focus on evaluative studies of existing communications (even though its status and limitations in this respect were not always clearly recognized as such) and, on the other hand, later research programs on mass media sponsored by the armed services have tended sharply away from primary emphasis on evaluative studies and toward experiments that are concerned with measuring instructional outcomes as they are affected by factors which, though not uniformly defined in theoretically well-grounded terms, do represent systematic experimental manipulation of content and procedural elements. The latter programs, although oriented more immediately toward specific, practical needs of military training, have thus also recognized the cogency of Lewin's dictum, quoted by H-J-K, that "Nothing is so practical as a good theory."

The World War II program underlying H-L-S also differed from the present H-J-K program in that it dealt with a wider variety of communication objectives, including both the criteria of opinion and attitude change on which the H-J-K studies of persuasive communications focus, and also the more specifically informational objectives, associated with instruction and training, which have more recently been the major pre-occupation of the military-sponsored research groups such as the Navy's Pennsylvania State College film research program and the Air Force audio-visual research program.

The third interesting difference between the H-L-S and H-J-K studies—and one which is more than accidentally related to the differences in research purposes and communication objectives just noted—is that the former studies generally employed the film medium whereas the latter have utilized primarily the media of audio recordings and printed materials. The latter media are not only much more amenable to experimental manipulation at moderate cost than is the film medium, but are probably, at the present state of the art at least, as well or better suited to experimental study of most of the kinds of factors in persuasive communications with which H-J-K are concerned. (By contrast, experimental manipulation of filmic material—especially of sound motion pictures—not only imposes far greater demands of material and technology but is probably more essential to current research in the instruction and training area than in the area of persuasion and opinion change.)

The specialization in the research focus of the H-J-K studies (as well as of later training-film research) seems important as a sign of the times and as evidence of a stage of growth in the evolution of communication science. However, the concentration of research effort in H-J-K on verbally presented communications by no means limits the applicability of their work to the media which they have employed experimentally. Nor, correspondingly, does their concentration on measures of effects in terms of change in opinion or communication-induced motivational tendencies mean that the authors are less concerned with factors in *learning* of content than with "acceptance" factors (which are necessary but usually not sufficient factors in effective persuasion). On the contrary, we have noted that much of the theoretical thinking from which the H-J-K experiments stem, and to which reciprocally they lead, is in terms of factors perhaps more familiar to students of the scientific psychology of human learning than to students and practitioners of the persuasive arts. In the reviewer's opinion, this fact contributes strongly to H-J-K's importance both for research on persuasion and communication and for the whole field of human psychology and education.

WORLD COMMUNICATIONS

• T. V. ADAMS

• ROWLAND HILL

THE INTERNATIONAL COUNCIL FOR EDUCATIONAL FILMS

The desire for a freer exchange of teaching films between nations is now closer to realisation.

Ever since the motion picture film was invented, teachers have seen in it a means for more concrete representation of the world and have sought ways and means of bringing it into the classrooms. An international exchange of teaching films will help to further visual education generally in all participating countries.

The desire for an exchange of films was never so strong as it is today. The work of the United Nations, particularly such member agencies as UNESCO, has given urgency to the question of international film distribution. At the practical level, the United Nations has already found films a useful channel for the furtherance of information aimed at a deeper, more lasting international understanding. However, for obvious reasons, the United Nations has been concerned more with the understanding of the world's adults rather than the children.

The Difficulties of the Exchange of School Films.

Many difficulties lie in the way of a plan for universal exchange of visual teaching materials. Language is one problem, especially in those countries which favor the sound film. Sometimes the cost of making additional language versions of the film is a considerable deterrent because, even in the country where a film is made, a school film may have so limited a circulation that its cost of production is not recovered. Tariffs also interfere with the exchange of teaching films between nations, although there is now hope that some tariffs will be dropped when the UNESCO convention on educational films is in force.

Teachers want films from other countries, but they want them produced in their own idiom, according to their own approach to the

T. V. Adams is Education Officer of the National Film Board of Canada. Rowland Hill also of the National Film Board, is in charge of the preparation of supplementary printed materials for rural and urban circuit programs.

study of other lands. The films ordinarily produced in one country for teaching do not usually prove effective in the classrooms of another country. This is especially true of human geography films. Films about the geography of Canada, made in Canada for Canadian schools, may prove quite inadequate to the task of creating an intelligible picture of the country in the mind of a German or even an English child. It is a question of perspective. Edgar Dale in his introduction to the first issue of this magazine emphasized the difficulty of intercommunication. He explains: "If we are to communicate effectively, the communicator must know the symbols, the cues, the stimuli to which the other person will react." This is all the more true of classroom films intended for children abroad. Our symbols, cues, and stimuli differ between regions even in our own country, so that it is easy to understand how greatly they differ from those of people abroad. The films about foreign lands wanted by teachers of any one country must be made from point of view of their interest and their understanding. In other words, an international plan for exchange of films requires also an international swapping of points of view if it is to succeed.

It is against this background of experience and theory that a group was formed in Europe to organize the production as well as the distribution of teaching films among nations. The group, now called the International Council for Educational Films, came together almost accidentally following the Second International Cultural Film Congress in Bern. What motivated their meeting was obviously a "mood of mutuality" such as Edgar Dale suggests. Most of the members were employed by the Ministries of Education. At the first meeting in 1950 only Luxembourg, Austria, Switzerland, Sweden, and Western Germany were represented. But they were not long in agreeing to work together for practical cooperation in exchange of educational films and information and finally, the production of what they called economic geographical films about their own countries for joint use.

This film study group, for at this stage that is all the members deemed it, met again following the Third International Cultural Film Meeting in Salzburg in October 1951, but this time there were representatives from Great Britain and Holland, as well as the original group. At this meeting questions of organization, a constitution, and the incorporation of the study group into an existing international organization were discussed. Austria, well ahead of the others, presented a statement of what it needed in an economic-geography film about Switzerland. Thus, the plan, organized in such an informal way, was already becoming fruitful.

The plan, of course, at this stage does not embrace all countries. The people present at earlier meetings of the international film council were actually next-door neighbors, and very often close friends. In fact it was a European plan originally. The countries

now represented on the Council are West Germany, England, France, Netherlands, Italy, Canada, Luxembourg, Austria, Scotland, Sweden, U.S.A., Switzerland, Belgium, Denmark, Finland, and Norway. The Councils' secretariat is Herr Director M. R. Hartmann, Erlachstrasse 21, Bern, Switzerland. The United States is now represented by Mr. James J. McPherson, Executive Secretary of the Department of Audio-Visual Instruction of the National Education Association. The Canadian member is Mr. James Beveridge, the European representative of the National Film Board of Canada.

Economic Geography Films Are Needed

It is not hard to understand why there was such ready agreement on the need for films showing the human geography of the various countries represented by the group. Vast changes had come about during the war and in the period after it. Many of the films formerly used were no longer apposite. For this reason priority was given to the production of new films. This choice was further reinforced by the common eagerness to create better understanding of one country by another. It was felt that the classroom was the obvious place to start.

The plan of production is a simple and practical one. Each country agreed to produce or obtain one or more films designed for the curricula and customs of the other countries. This meant that the Swiss in undertaking production of a film on Switzerland suggested by Austria would make it to the specifications of the Austrian teachers rather than their own. Planned in this way it was expected that the films would overcome the difference in perspective that formerly had made the films of one country unsuitable for use in schools elsewhere.

When the films had been made it was agreed that the producer would supply negative material to all the other participating countries. With the negative material would go the permission to change or adapt the film according to the domestic educational requirements of the receiving country. This means that some countries will make captioned silent versions, others a sound version in their own tongue, and others would show a mute copy. It was understood of course that such alterations would not prejudice the general character and purpose of the films.

Further agreements among members of the film exchange group established standards that would aid the adaptation of films between one country and another. One of these was the formulating of a mutual vocabulary of film terms.

Canada and the United States

The United States and Canada differ from most other members of the group in that they have more than one educational authority. Canada with 10 provinces has 10 departments of education, each of them different to some extent in policy, practice and attitude. Similarly in the United States there must be a considerable diversity in teaching among the several States. This, of course, complicates United States and Canadian participation in the work of a predominantly European film association. However, direct representation of all the educational authorities of Canada and the U.S.A. is impractical.

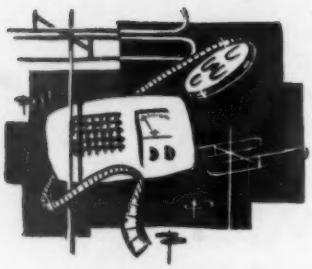
A working arrangement for Canada was achieved through Mr. Beveridge, the European chief of the Canadian federal film agency. This was made possible by the interest of a committee of the Canadian Education Association, a body similar in most ways to the NEA. The Canadian Education Association had already appointed a committee to advise the National Film Board on the production of films and filmstrips. Advising Mr. Beveridge of Canadian schools' needs was simply an extension of this committee's responsibility. Reports from the NFB's European representative are sent to the Secretary of the CEA advisory committee and through him reach the directors of visual education in all the provinces. Any question requiring the joint opinion of Canadian education authorities can in turn be channeled back to Mr. Beveridge through the CEA committee. Through this working arrangement the National Film Board of Canada has already undertaken production of two films for the schools of Europe. The first of these films called, "Winter in Canada," has already been delivered and the second, "The Physical Regions of Canada," will be previewed at the meeting of the ICEF in Paris early in April.

The North American Problem of Distribution

It is a difficult enough task to produce films on our countries to the specifications of education authorities in Europe; but the problem of putting authentic, made-on-the-spot European geography films into circulation in Canada and the U.S.A. presents problems which may be even more difficult to resolve. In the first place, Canada and the United States are a minority group in the ICEF, and rightly so, for it is essentially an European show. The films which are being produced are planned primarily to meet European needs and we will find most of them more detailed than we would like them to be. It is natural that we should give more time to a study of North American geography and less time to a study of European countries than they do.

Secondly, we are accustomed to sound films and many of the European films will be silent, although shot at sound speed. Only one or two are being made originally in English. Will the market for these subjects on our continent be wide enough to make it practical for a commercial producer to dub the films in English? Will we be guilty of needless duplication if we make English and French versions in Canada while United States authorities make their own English versions?

The successful operation of the International Council for Educational Films in Europe, where borders are more tightly drawn than ours, presents a real challenge to us. If we can cooperate, as effectively as they do, we have an opportunity to make available material which will go a long way towards helping our children to see the children of Western Europe through the same familiar lenses through which they see themselves. Are we going to accept this challenge?



FILM REVIEWS

•ROBERT W. WAGNER

TWO RECENT UNIVERSITY-PRODUCED FILMS

RICE FARMING IN JAPAN—UNIVERSITY OF MICHIGAN

Rice Farming in Japan is a 12-minute, sound, color film produced by the University of Michigan's Audio-Visual Center, and the University's Center for Japanese Studies.

Photographed in a country where every grain of rice is sacred, the picture becomes more than an exposition of how rice is planted, cultivated, and harvested. It is a fragment from the core of the Japanese way of life. This way of life is reflected in the minute care with which a farmer smooths the muddy earth with his bare hands, and in a close-up of rice shoots being skillfully and tenderly transplanted by women who, although knee-deep in mud, are wearing their best clothing for this important occasion. It is reflected in shots of the human-powered treadmills raising water from the irrigation ditches, and in the careful fertilization of the earth with ashes and nightsoil. The harvesting, drying, threshing, winnowing, hulling, cooking, serving, and eating of the rice is interwoven with the daily life of 84 million people who place it not only on their tables for the sustenance of their bodies, but also on their altars for the sustenance of their souls.

This is an interesting and detailed film which should enjoy wide distribution and favorable comment from the intermediate grades up through the adult level. If any criticism can be made, it would be that the film contains enough genuine interest and solid informational content to run considerably longer than 12 minutes. Some of the steps in the process of rice farming seem to be too brief for full appreciation, due, perhaps, to the fact that several scenes seem to have been shot originally at silent, rather than at sound speed.

Robert W. Wagner is Director of Motion Picture Production, The Ohio State University.

Nevertheless, it is an excellent little film, worthy of the special attention of teachers of social science and geography. The background music, taken from recordings by Miyagi, the blind Japanese harpist, adds flavor to a film expertly produced and edited by Albert Lavastida, and well photographed by Donald Anderson who, presently an instructor in Michigan's Center for Japanese Studies, has brought back an authentic picturization of *Rice Farming in Japan.*

Prints may be secured at a purchase price of $85, or a rental charge of $3.25, from the Audio-Visual Education Center, 4028 Administration Building, University of Michigan.

THE LEGISLATIVE PROCESS—INDIANA UNIVERSITY

The vicarious experience of a motion picture can never completely substitute for a live experience. A good film, however, may supply insights which cannot be gained by any other means. This is especially true in the case of *The Legislative Process,* a new, 29-minute sound film produced by Indiana University's Audio-Visual Center.

Early in 1953, a remarkable resolution was introduced in the Indiana State Legislature. This resolution stated that while large numbers of schoolchildren visit the legislature each year, "such brief visits fail to give them an opportunity to learn the intricate functions and the more serious deliberations of their legislative branch of government."

In a significant expression of faith in audio-visual methods of communication, the legislature recognized that "audio visual education has come to the front in our schools as a more effective method of teaching and enlightening our youth." A committee of the Eighty-Eighth General Assembly was directed to work with the Audio-Visual Center at Indiana University "to produce a colored sound motion picture of the Indiana General Assembly in action, outlining therein the steps and methods showing how a bill becomes a law."

The resulting film is a clear-cut exposition of the workings of the bi-cameral legislature typical in all but one of the 48 states. It is a detailed picture of legislative procedure, from the first reading of a bill in the House, to the final vote in the Senate, and the approval of the Governor of the State. The various steps through which the bill passes are tied together by an animated flow-chart intercut with sequences, many of them with synchronous sound, showing the legislators in action. The three-ring circus of government is thus thrown into one ring. Here is a distillation of a 61-day legislative session which no student could possibly see in a single visit, or even in a series of field trips to the state capitol. It puts

the viewer on the floor of the Senate. He sees the action from the Speaker's platform. He sits in on a party caucus, hears a lobbyist pleading his case, sees the printing press turning out the bills following favorable committee action.

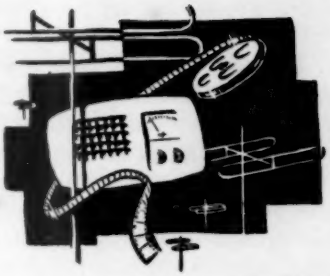
Incidental touches add richness and reality to the presentation —the prayer with which the legislators begin their work; the electric voting machine controlled by buttons at the lawmakers' desks; the applause of the representatives following the introduction of a group of visiting highschool students. The result is a feeling of "you are there"—which is exactly what was intended by the makers of this semi-documentary.

Technically, the problems of photographing a state legislature in action have been competently handled by means of a multiple-camera set-up, synchronized with sound recording equipment. Minor technical flaws are lost in an overall treatment reminiscent of television coverage of recent political and legislative sessions on the national level.

Warren D. Stevens was executive-producer of *The Legislative Process*. Jack Tyo, who served as director-editor, collaborated with Miss Beryl Blain on the script. Malcolm Fleming directed the staff of seven cameramen responsible for solving the problem of lighting the legislative chambers for color photography. The material and treatment were authenticated not only by the Film Advisory Committee of the Legislature, but also by a four-man committee of the University faculty, composed of authorities in the fields of law, government, and the social studies.

Throughout the film, the debate, the deliberation, the open hearings, and the checked and balanced workings of a bi-cameral legislature and a two-party system, provide a rich background for thought and discussion in a country where democracy rests on this legislative process. While intended primarily for wide distribution throughout the schools, this is a film of real stature, and one which every adult American should have a chance to see—not once, but several times.

The Legislative Process is available from the Audio-Visual Center, Indiana University, Bloomington, at a purchase price of $250 color; $135 black and white. The rental charge for one to five days is $8 for a color print; $5 black and white.



RADIO

•JIM MILES

OMNIBUS, OPPOSITES, HI-FI, AND COMPETITION

A REVIEW OF PROGRAM TRENDS

I can remember the day when the methods of programming a radio station manager had at his disposal were no more than three. He could program a talk; he could entice some "live" talent into his studios to play or sing; or (and this was more often the case) he could go down to the local record establishment and buy all the records he could pay for. Before the days of imagination (or do we mean unionization) in broadcasting it was possible for our friend to set up a series of bins in his music library, select a theme for his program, pick three records from the top of the pile for his 15 minute program, and play them on the air with appropriate comments supplied by himself between each selection. After the program had been aired, he returned to his station's music library, put the theme back on top of the pile, put the three records he had played that day on the bottom so they would not come up again on tomorrow's program, and he was ready to play the following top three discs the next day. This was about as far as local programming went. It wasn't very different from what anybody else was doing, but that didn't matter much because whatever they were doing it wasn't any better. There just was very little else being done around a microphone, and the audience, just like the audiences of today, never complained.

As time went by, however, and the station manager's competition grew along with his volume of advertising, he began to wonder (with his advertisers) how many home radio sets were actually tuned to his station at any given time during his broadcast day. The first of the audience measurement studies began to appear, followed by others, and soon he began to change his formats and juggle his program times to different hours of the day in order to

Jim Miles is Director of Station WBAA at Purdue University. Credit for assistance in the preparation of this article is due Robert S. McMahon, Producer at WBAA.

reach and hold as many people as possible. He began to study his competition; he imitated and borrowed whatever seemed to be good; he disliked being different from the norm as far as program ideas were concerned.

And even though he knew that Mr. Lincoln himself had once said "You can't please all of the people all the time," he thought he would at least try. This trial and error period of development in radio programming, while sometimes slow in growing, was nevertheless effective when it happened. One of the more important lasting developments to come out of these years of trial and error was the block program technique. Some of the listening studies seemed to show that programming could be improved upon through a method of logical integration over a period of time ranging from one-half hour to an hour, or even longer. It was found that people liked to have a sportscast followed by a newscast, and that in turn followed by a commentary. This meant they could get a complete picture of the happenings of the day all at once, rather than at odd intervals. This new idea when finally seized upon was applied to all types of programs at all hours of the day, so that if you turned your radio on in the morning at the breakfast table and left it on during the day you would find yourself listening to "block" segments of music, news, soap opera, farm programs, cooking and marketing programs, variety, children's programs, news, music, mystery and so on until sign off. Each program had a neighbor, a kind of corollary that it supported and supplemented, so that once the listener found himself "in the mood" to listen to a certain type of program he was sure he would find plenty of it around. The old idea that the five minute newscast was about as long as an audience would listen went the way of all trash, and even the commercials kept getting longer and longer.

This whole new trend has finally culminated in the "Omnibus" type of program. Current examples of this type of programming would include: NBC's recent two hour Sunday afternoon radio marathon "Weekend"; "Omnibus" itself on CBS; Dave Garroway on NBC-TV; and we might as well also mention the Arlene Francis "Home" Program on NBC-TV. What used to be known as the block program of "likes" in definite time slots, under different labels, using the same basic materials, is now still a series of "likes," but the dividers have been taken out and the labels dropped.

This new technique is not only used by the big boys in the trade but is also finding its way into the small independent stations as well as non-commercial stations such as our own here at Purdue (WBAA) where we have three major newscasts daily running 30 minutes each, utilizing the multiple voice technique in a breakdown of five minute segments, under the direction of one "master of ceremonies." Included in the 30 minutes are national, international, and

regional news, commentary, sports, women's and human interest items. The program picks up pace and variety through the treatment used. During football season, a four to five hour Saturday afternoon "Pigskin Panorama" accomplishes the same thing spotlighting sports.

There is yet another aspect of the competition factor in broadcasting that needs to be discussed. For a long time, educators and others have deplored the "share of audience" fear that has plagued commercial broadcasters. Why anyone should be convinced that they must imitate their competition at any given time so that the other's material would not appear to be more popular than their own has just never made sense. Because of the idea of seduction of the "mass audience" we have had to live through a period in AM broadcasting when we were well aware before we turned our set on that our chances of getting anything but a mystery show on our receiver on certain nights of the week were very slight indeed. We have had the "give away" jitters, "quizitis," "inflamation of the tear ducts," and the comedy-variety itch all in rapid succession and have suffered much.

Now, however, the trend is changing and we're being provided with a wider variety of radio fare. This situation seems to be due to one or two forces in particular. The first reason for the change-about is due in large to the impact of the independent stations, of which there are many in radio, and the fact that they managed to show eye-opening profit margins by providing programs that were really different from network shows (WNEW, New York; or WIND Chicago, for example,) instead of dutifully turning out stereotyped copies of them. The second reason for the change is, of course, television. Television has robbed radio of its fallacy of the mass audience. There really is some truth to the statement you often hear nowadays on your AM set, to the effect that radio is getting better all the time. The stations have quit chasing after the mythical millions and settled down to a calm and reasoned appraisal of the significant minorities (another bad term to use). WMAQ for instance, during the spring of this year did something quite out of the ordinary. They experimented with a simultaneous broadcast on AM, FM and TV on Sunday afternoon. If you owned both a television set and a radio it was possible for the first time in your life to have television with "binaural" sound. By turning on your AM or FM Radio and your television set, a body was able to "hear" the same sound from two different sources (you only saw one picture however, and it wasn't in 3D, but then you can't have everything). This "hi-fi" program situation is due to be repeated and enhanced in the future.

It has been discovered that cultural minorities are not necessarily small minorities. The networks in AM are tending more

and more toward what used to be the prerogative of the educational stations. Even stranger yet to say, their affiliates are actually broadcasting these new programs instead of carrying their own at these times. CBS, for instance, on Sunday afternoons programs the New York Philharmonic from Carnegie Hall, thanks to Mr. William Paley's foresight and convictions. (When he was told that there would be no audience for the program he replied, "We'll create an audience.") This is followed by a really fine job of reporting by the CBS news staff all over the USA on the program "The World Today," and rounding out an afternoon of good listening is a program on the theatre in the U. S. called "Stage Struck." CBS's "Feature Project," an exposé of some major sociological problem, is carried once a month in the slot of the latter program and is one of the best of its type ever to be aired by any station or network.

By comparison, television seems to be following the earlier pattern of radio in a travesty of imitation of what the other fellow has to offer. (Saturday evening, Jackie Gleason opposite the Show of Shows; Sundays, the Colgate Comedy Hour opposite Ed Sullivan.) The situation will undoubtedly continue in this manner until once again local programming improves.

Competition, as we have already mentioned, permeates all these changes and perhaps explains all of the major programming trends. Certainly there are smart and capable people in all areas of communication today. We have only to cite the improvement in magazines, newspapers, hard and soft-bound books, movies and TV as as well as radio to see that this is true.

It is becoming increasingly apparent that the days when radio could count its audience in the millions for a particular special event or high level show are gone, never to return. It is true that from now on, radio is going to have to play second fiddle to television in terms of the number of viewers tuned to a given origination, but this does not mean that radio will not continue to perform a vital and important function. In regard to this, let's turn our attention for a moment to an editorial that appeared in one of the March issues of *Broadcasting Magazine*— we admit that perhaps it shows a little prejudice against other forms of communication in comparison with radio, but nevertheless there is a lot of truth in what the man says:

AND THE SETS WERE SILENT

The Archbishop of Philadelphia has recommended to the more than one million Catholics in Southeastern Pennsylvania that they abstain from radio and television during the Lenten season, which began last Wednesday.

"Disconnect your television or radio for a week and then make an honest appraisal," the Most Rev. John F. O'Hara admonished. "Have you missed anything worthwhile? What have you gained?"

We should like to pose the question another way. "What have you lost?" We shall allude only to a typical week of no radio or TV in the distinguished clergyman's archdiocese.

At an inconvenient hour for newspaper deadlines, the Pope, whose condition has been a matter of extreme anxiety, improves or, as no one hopes, worsens. Relays of reports from the Vatican radio are unheard by the Catholics of Southeastern Pennsylvania.

Farmers in the rich valleys of the archdiocese must depend upon outdated weather reports in newspapers reaching them by mail, some at only weekly intervals. They must market their produce by hunches, as they have no means of keeping up to the minute on market conditions and prices.

A snow storm strikes Philadelphia during the night. Will there be school today? Which roads are open; which are closed? Are the buses running?

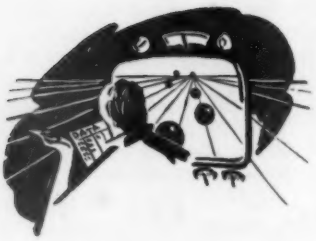
There's an urgent appeal for a rare type of blood needed in an hour at the emergency hospital. The radio broadcast fortunately produces a non-Catholic volunteer.

The television fight pits McGillicuddy of Boston against Fiorello of the East Side.

Gonzaga High School is playing for a basketball championship. The game will be broadcast.

On his weekly LIFE IS WORTH LIVING, the Most Rev. Fulton J. Sheen has a special message for Lent.

And the sets were silent.



RESEARCH ABSTRACTS

MOTION PICTURES

MERCER, JOHN. "The Relationship of Optimal Effects and Film Literacy to Learning From Instructional Films." SDC 269-7-34 Instructional Film Research Program. Port Washington, L. I., N. Y.; Special Devices Center, November 1952.

Purpose: "Optical effects such as fades, dissolves, and wipes increase film production time and expense. They have been used to indicate a lapse of time or change of locality. This research was done (a) to determine the relationship between learning factual material from films and the use of optical effects and (b) to study the nature of the 'film literacy' factor and its relationship to learning from films."

Procedure: An analysis of current practices in the use of optical effects was first completed. Afterwards, several small scale experiments were undertaken. Twenty-four trainees took part in an assessment of the general meaning of opticals. After an explanation of cuts, wipes, fades, and dissolves a film was shown employing these different opticals. After the film each man filled out a questionnaire concerning the meaning or purpose of these four practices. Another 22-man sample was split into two groups. Group A was given a definition of each of the optical effects while Group B was given no instruction. Both groups were then shown a film and instructed to interpret the meaning of each optical employed in the film. In the final experiment, three versions of two separate films were prepared. Version A had no opticals (only cuts). Version B employed opticals only between main sequences. Version C retained opticals employed in original films. Nearly a thousand trainees participated. Prior to the film showing, half of this group was shown experimental materials on the use of these various opticals with the purpose of increasing their "film literacy." After the film showing, tests were administered and an analysis of the effects of the "film literacy" factor on learning was analyzed.

Results: (a) Little agreement seems to exist as to the specific meanings on uses of fades, wipes, and dissolves either by producers or members of a general audience. (b) An explanation to an audience of the uses of these opticals is of no significant help in interpreting distinctions for various cinematic transitions. (c) Audiences can notice opticals when requested to do so. (d) Opticals do not appear to aid factual learning. (e) "Film literacy" does not produce significant gains in learning from films. (f) A "film literacy" lecture and demonstration prior to a film showing does not produce significant learning gains.—*Edmund Faison.*

GRAPHS

PETERSON, LEWIS V. "Use of Graphs in Air Force Teaching Materials." Division of Communications, University of Illinois, Human Resources Research Institute Research Memo #14, Maxwell AFB, Alabama, August 1953.

Purpose: "To summarize in a brief monograph the best knowledge about the use of graphs in instructional materials."

Procedure: Presumably this report results from a comprehensive survey of the available literature although no references are cited.

Results: In general, there are seven types of graphs: multiple bars; divided bar; divided circle; line graph; cosmograph; composite bars; and pictograph. The preferred charts for several of the common graphic problems are given: (a) Simple comparisons—multiple bars and pictograph. (b) A whole and its parts—divided bar, divided circle, cosmograph, and pictograph. (c) Multiple comparisons—multiple bars, line graph, and composite bars. (d) Loss and gain comparisons—multiple bars, line graph, composite bars, and pictograph. (e) Frequency—multiple bars, line graph. (f) Narrative charts—This category differs from the others in that it does not attempt to show numerical relationships. Charts under this category are: organization charts, genealogical charts, flow charts, inventory charts, and cause and effect charts. —*Edmund Faison.*

TRAINING DEVICES

ECKSTRAND, GORDON A. "Response Practice as a Factor in Transfer of Training." AF Tech. Rpt. #6017, Wright Air Development Center, Wright-Patterson AFB, Ohio.

Purpose: "In some types of training devices it is relatively easy to simulate accurately the manual responses of the operator in the actual task but difficult and expensive to simulate in detail the stimuli to which these responses are made." Accordingly, the present experiment attempts an answer concerning the value of practice on responses required in a task in the absence of the relevant stimuli.

Procedure: A vertical display panel was exposed to four groups of approximately 30 men each. Any one of four colors or four letters could be exposed through an aperture in the display panel. During the actual training trials each subject was requested to respond to one of four colors by pressing the appropriate reaction key every time one of four colors appeared. The four experimental groups differed as to the pretraining given. In the pretraining trials letters rather than colors were employed as the stimuli to which the subjects had to press the reaction keys. Groups I, II and III received 16, 32, and 64 pretraining trials respectively. Group IV served as a control group and received no pretraining trials.

Results: (a) All experimental groups receiving response pretraining in absence of the task stimulus were superior in performance of the actual training task than the group receiving no pretraining. (b) The more response pretraining given, the more superior was the performance in the task situation. —*Edmund Faison.*

GENERAL COMMUNICATION STUDIES

FREIDSON, ELIOT. "The Relation of the Social Situation of Contact to the Media in Mass Communication." *Public Opinion Quarterly* 17:230-238; Summer 1953.

Purpose: To find out what relevance the social situation of contacting mass media has to audience responses. The social situation of contact is described as "the immediate social setting of contact with content and medium; that is, the people who are immediately involved in the individual's interactions when he is a member of the audience."

Procedure: Interviews were conducted with a group of 79 third-generation, Polish-Catholic, upper-lower class public-school boys from kindergarten, second, fourth, and sixth grades.

Three basic social situations of contact were investigated: alone—the child socially alone; the peer situation—the child in the company of his friends; and the family situation—the child in the company of his parents, grandparents, much younger or older siblings.

Three mass media were investigated: television, movies, and comic books.

Results: (a) Social Situations of Contact: There is a strong tendency for the particular situations to be characteristic of particular media. Television is characteristically connected with the family, movies with the peer, and comic books with the alone situation. (b) Situation Appeal: Kindergarten and second grade children tend to prefer family situations. Fourth grade children tend to prefer being alone. Sixth grade children tend to prefer being with peers. (c) Medium Preference: Kindergarten, second and fourth grade children tend to prefer television, and sixth grade children tend to prefer movies. Comics drop out, apparently they lack the appeal of movies and TV, and the fact that they might be contacted in a preferred situation (alone) cannot overweigh the relative lack of appeal.

General Conclusions: Although the evidence has come from a limited audience that is not representative of the general population, it is indicated that the study of the relation of content to the demographic attributes of the audience (age, sex, education, etc.) does not adequately explain why the spectator responds as he does. It is clear that at least in the case of the audience studied, the social situation of contact is a significant factor involved in experiencing mass communications.—*E. G. Sherburne, Jr.*

LUMSDAINE, ARTHUR A. and JANIS, IRVING L. "Resistance to 'Counter-propaganda' Produced by One-Sided and Two-Sided 'Propaganda' Presentations." *Public Opinion Quarterly.* 17:311-318; Fall 1953.

Purpose: To compare the effectiveness of two different types of communication in preparing individuals to resist the influence of subsequent propaganda. One type of communication was one-sided: a persuasive communication concentrating exclusively on the arguments supporting the communicator's position. The second type was two-sided: a persuasive communication supporting the communicator's position, but also including discussion and refutation of the opposing arguments.

Procedure: The one-sided and the two-sided communications were transcribed as "radio programs." Four experimental groups were used, composed of high school students. All groups were given an initial questionnaire as a part

of an independent "opinion survey." Two groups were then exposed to the one-sided communication. Two other groups were exposed to the two-sided communication. After a week, a second transcribed "radio program," designed to function as counter-propaganda, was presented to one group which had received the one-sided communication, and to one group which had received the two-sided communication. A questionnaire was then given to all four groups. A fifth group, functioning as a control, was also given the initial and final questionnaires."

Results: (a) For those groups which were not exposed to counter-propaganda the two versions were found to be about equally effective in modifying opinions. (b) For those groups exposed to counter-propaganda, the two-sided version proved to be markedly more effective in producing sustained opinion changes.

General Discussion: A tentative explanation is suggested. "Regardless of initial position, a convincing one-sided communication, presenting only positive arguments, will tend to sway many members of the audience farther in the direction advocated by the communicator. However, when these persons subsequently hear the opposite point of view, also supported by cogent-sounding arguments, their opinions tend to be swayed back in the negative direction, especially if the new arguments appear to offset the previous positive arguments. But if the initial communication is, instead, a two-sided one, it will already have taken into account both the positive and negative arguments, and still have reached the positive conclusion. When the listener is subsequently exposed to the presentation of the opposing arguments in the counter-propaganda, he is less likely to be influenced by them. He is not only familiar with the opposing point of view, but has been led to the positive conclusion in a context in which the negative arguments were in evidence. In effect, he has been given an advance basis for ignoring or discounting the opposing communication, and thus 'innoculated,' he will tend to retain the positive conclusion."—*E. G. Sherburne, Jr.*

WORD OF MOUTH

BAUER, RAYMOND A. and GLEICHER, DAVID B. "Word-of-Mouth Communication in the Soviet Union." *Public Opinion Quarterly.* 17:297-310; Fall 1953.

Purpose: Although an essential premise of Soviet communications policy is monopoly, there exists an important system of informal, oral communication side by side with the controlled, official media. This study explores certain characteristics of word-of-mouth communication in the Soviet Union.

Procedure: Some 2700 questionnaires and over 300 oral interviews were obtained from Soviet refugees contacted in 1950-51 in Europe and Africa. All but 80 of the respondents had left the Soviet Union before the war's end, and most of the interview data refers explicitly to pre-war experience. However, examination of the 80 postwar cases indicates that the patterns are in no way dated, and are characteristic of the Soviet Union today.

Results: (a) Asked to indicate their regular sources of information about what was going on, 89 per cent of the respondents mentioned newspapers, 50 per cent mentioned word-of-mouth, and 50 per cent mentioned radio. (b) Asked to indicate their most important sources of information, 43 per cent indicated newspapers, 33 per cent mentioned word-of-mouth, and 13 per cent mentioned

radio. (c) Respondents with low anti-Soviet sentiment were more frequently exposed to word-of-mouth communication than those with high anti-Soviet sentiment. (d) Upper-class individuals received word-of-mouth communication more frequently than did lower-class individuals. (e) Word-of-mouth information was a more important source of information for lower classes than for upper classes. (f) All classes considered rumor more reliable than official media, but a far larger percentage of the upper-class individuals stated this than did those of lower-class status.

General Discussion: A consideration of the factors associated with the class-related differences in communication suggests the following hypotheses: (a) Word-of-mouth may be either a substitute for the official media, or a supplement to, and a corrective for, the latter. The substitutional function is characteristic of groups who have a low level of communication activities, such as the peasantry. The reverse is true of the supplemental-corrective function, which is found in groups with a high level of communications activity, such as the urban intelligentsia. (b) By virtue of the pressures put on persons in responsible positions, and by virtue of their superior access to information sources, the use of word-of-mouth is generally positively related to involvement in the Soviet system. (c) Highly placed persons, having access to superior sources of information, are also more inclined to credit word-of-mouth with more reliability than the formal media.—*E. G. Sherburne, Jr.*

OTHER PUBLICATIONS

Department of Audio-Visual Instruction
National Education Association of the United States
1201 Sixteenth Street, Northwest, Washington 6, D. C.

Conference Proceedings 1952
Price, $0.75

Conference Proceedings 1953
Price, $0.75

Guide to Films in Economic Education
Price, $1.00

Guide to Films in Human Relations
Price, $1.00

Planning Schools for Use of Audio-Visual Materials—No. 1, Classrooms
Price, $1.00

Planning Schools for Use of Audio-Visual Materials—No. 2, Auditoriums
Price, $1.00

Planning Schools for Use of Audio-Visual Materials—No. 3, The A-V Instructional Materials Center
Price, $1.00

The School Administrator and his Audio-Visual Program—1954 Yearbook
Price, $3.75
Special Rate to DAVI Members:
Price, $3.00

All publications, except Audio-Visual COMMUNICATION REVIEW, are subject to the following discounts on quantity orders:

2 to 9 copies	10%
10 to 99 copies	25%
100 or more	33⅓%

Orders for $1.00 or less must be accompanied by a check or money order.